

NORWAY CRISIS

NORWEGIAN wet fish trawlers are being temporarily laid up because there is not enough fish for them to catch.

The move, which was announced by the Norwegian Trawler Owners' Association last month, affects about eighty vessels. As they return from trips they are being tied up for a period of two weeks.

This is the first emergency step to alleviate a crisis in fresh fish supplies in Norway which is threatening the livelihoods of 1,100 fishermen and 5,000 processing plant workers.

The cause is a long spell in which catches have gone from bad to worse. Fishermen say that the Arctic waters are 'black', meaning without fish.

The State Fishermen's Bank has already granted postponements of about 20 million kroner due in loan payments and interest.

Trawling firms have applied for additional postponements and unemployment pay for their crews.

• Fish-processing industries in Northern Norway have laid off 1,000 workers, roughly a quarter of the work force, because of a drastic drop in fish supplies, writes *FNI* correspondent Nick Wade.

Inshore boats and deep water trawlers alike are returning with hardly enough fish to pay for their fuel.

Fungus may be cause of 'rotting' French boats

A SPECIES of fungus may be the cause of a serious outbreak of timber rot which is hitting inshore fishing vessels in northern France.

It is reported that at least 200 boats are affected between the ports of Boulogne and Dieppe, and that around 40 of them have been declared unrepairable.

The affected timber comes from the Saint Sains forest. Some believe that it may have been badly seasoned; others that a fungus is responsible.

Whatever the cause about 1,500 fishermen are said to have been brought ashore since the trouble was first noticed last year — some of them for good.

Greeks want to buy in Pakistan

THE Greek Atlantic Cod Fishing Company Ltd., has offered to send one of its factory vessels to Pakistan to buy fresh fish, squid and shrimp from local producers. The consignments would be processed and frozen aboard.

According to official sources, these products can be sold in Greece and Pakistan provided a joint venture is set up and the Pakistan government does the marketing. Prospective investors have been advised to contact the Pakistan Embassy in Athens.

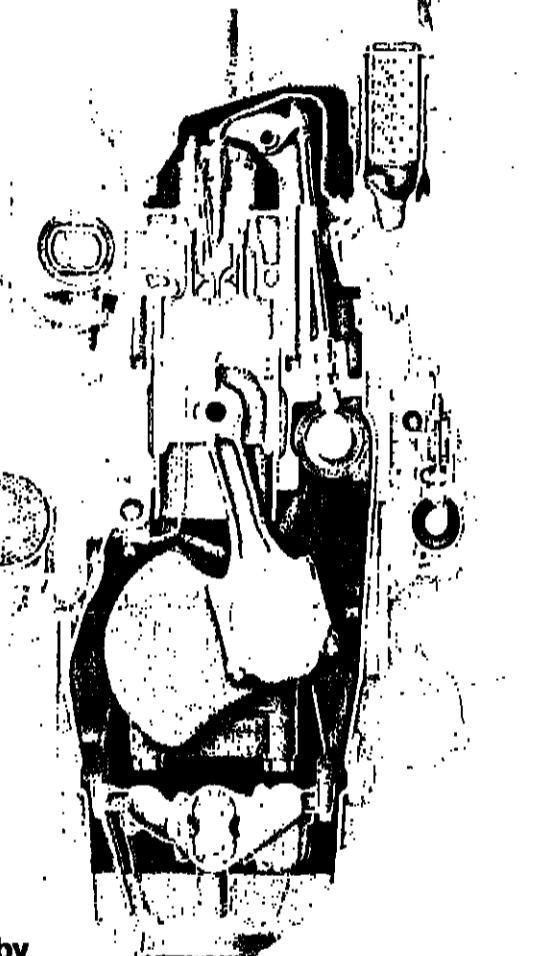
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CATERPILLAR

Latest ship quills for Nigeria

THE *Poseidon*, one of Norway's latest and most advanced fishing vessels, has been contracted to a Nigerian concern for an initial period of a year.

The owners say that the crisis in Norwegian waters makes it impossible to run her profitably.

fishing news international

December 1978 Vol 17 No. 12

75p monthly

TURMOIL IN THE EEC

Fish row goes to Brussels summit

BRITAIN and her eight partners in the European Economic Community last month looked further apart than ever in their struggle to agree on a fisheries policy. The latest round of talks in Brussels broke down on November 24, and it is now left to EEC leaders at this month's summit meeting to attempt to patch up the widening rift.

But as *Fishing News International* went to press it was not clear if the Prime Ministers preoccupied with the much weightier problem of establishing a European monetary system would find the time to settle the complex and emotive fisheries issue when they sit down on December 4 and 5.

The sudden and dramatic collapse of the fisheries talks shattered the hopes of the EEC Fisheries Council that a settlement to the 2½-year dispute over Britain's demands was at last in sight.

The Germans, in particular, were furious. They still hold the presidency of the EEC Council of Ministers, and they have invested heavily in reaching agreement before their term ends on December 31.

Joseph Ertl, German Agricultural Minister and President of the Council of Ministers, raged: 'The British demands violate the Treaties. Hopes of reaching a settlement have fallen to zero.'

Because of the 'nature and scope' of the UK's demands, he said, no further progress could be made at this level and the matter must be referred to the summit meeting.

A "travesty"

Other EEC fisheries ministers supported Ertl in denouncing Britain's minister, John Silkin.

Ireland's Brian Lenihan said: 'It is high time Mr. Silkin realised that the empire is finished.'

The French Minister responsible for fishing, Joel Le Theule, said that the British demands were a 'travesty,' and the Danish Minister, Svend Jakobsen, declared, 'It is impossible to agree on a common policy when the British disregard the Treaties.'

Two of Britain's demands which provoked such a heated reaction were:

- The amounts fished by other member states within the UK 12-mile limit between now and December 31, 1982, should not exceed 1977 levels. After that fishing vessels from other member states would be excluded.

- Beyond the UK's 12-mile limit the amounts fixed by other member states should not exceed the 1977 levels. However, the quotas could be adjusted 'to take account of variations between total international catches in that year and the TAC's...'

CHINA CONTRACT

TWO Japanese companies, the Marubeni Corp. and Hoko Fishing Co. have received an order of at least 100 billion Yen to help the Kwangtung Province of China modernise its fishing industry according to a report in the *Japan Economic Journal*.

Equipment will include fishing boats, refrigeration and processing plant, port and harbour facilities and transport equipment.

The Japanese firms are to

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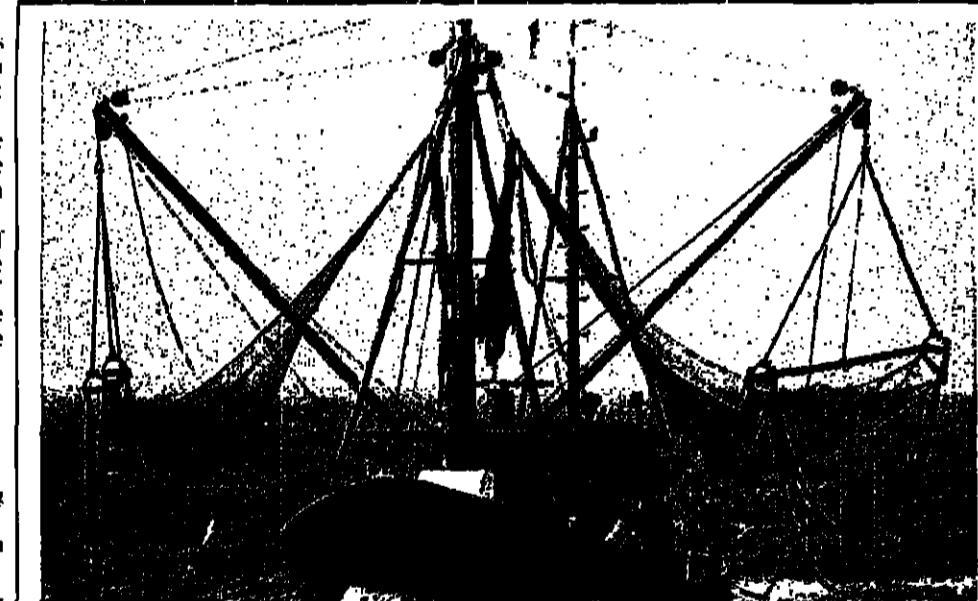
Arthur J. Heighway

IT IS with deep regret that we announce the death last month of Arthur J. Heighway, founder of *Fishing News International*. He was 90.

During his long career as a journalist and publisher he made many friends in the fishing industry worldwide.

His close contacts with the United Nations Food and Agriculture Organization led to the publishing of more than 100 books on fishing and related subjects.

OUR TRIBUTE — Page 2



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IN ROME in 1977, and Arthur J. Heighway is presented with FAO's Ceres medal "for services to mankind" by the then Deputy-Director-General Roy Jackson.

For services to mankind

A tribute to Arthur Heighway

AT 65, an age when most journalists are putting the covers on their typewriters, Arthur J. Heighway started a new career which was to benefit fishermen everywhere the printed word is read.

Founder of Arthur J. Heighway Publications and Fishing News (Books) Ltd., publishers of commercial fishing books, newspapers and magazines, his death in hospital at the age of 90, on November 18, was a sad loss.

Arthur Heighway first came on the fishing scene when he took the then ailing UK weekly *Fishing News* out of the hands of the receiver. With his journalist's instinct and shrewd business brain *Fishing News* was quickly revived and he turned his lively mind to the wider aspects of fishing leading to the launch of another newspaper, *Fish Selling*.

To broaden the base of his operations, he successfully began non-fishing publications, but by 1960 Arthur Heighway was drawn back to his long-held conviction that fishing was ready for worldwide expansion.

Just a year later, in 1961, he launched the first issue of *Fishing News International* as a quarterly magazine.

FNI was soon appearing each month and its rapid growth and success worldwide is, in itself, a tribute to the memory and vision of its founder.

Foundation

Throughout this time Arthur Heighway's contact with the United Nations' Food and Agriculture Organization convinced him that, in line with the world expansion of fishing, there was a need for good technical books and he began laying the foundation for a subsidiary company, Fishing News (Books) Ltd.

Further success in this role, highlighted his great talent for being able to communicate with fisheries experts, scientists and administrators at the highest levels setting down the wealth of their knowledge between the covers of books.

By the time of his death, Arthur Heighway had produced more than 100 books, many becoming standard reference works on fishing throughout the world.

In 1977 his achievements were marked by the award of FAO's Ceres medal... "for services to mankind."

Vigilant

Throughout these years, Arthur Heighway still kept a vigilant eye on his now highly successful newspaper and magazine interests.

He was quick to see the growing importance of farmed fish as pressure mounted on wild stocks and in 1973, he launched the quarterly magazine *Fish Farming International*.

In 1976 he decided to sell his newspaper and magazine interests and to concentrate on the book side of his business. But he still contributed his popular personal column in *FNI* right up to the time of his death.

Although on the last lap of his career when he started in the fish publishing world, Arthur Heighway gave, by most standards, a lifetime's work to fishing.

Born in Australia he moved at an early age with his family to New Zealand. But, following a Government takeover of his successful publishing business there, he moved again and arrived in wartime Britain, in 1940.

Within weeks he had made his mark in Fleet Street and was appointed editor of *World Press News*.

When asked in later years how he got into fishing, Arthur Heighway would answer: "It just happened." A modest reply — but for those who worked with him nothing was ever a "happening." Once involved he thought quickly and moved fast. Once involved he thought quickly and moved fast.

The minister, however, refused to give a definite answer on the possible return of fishmeal processing, sold off its fleet in 1976. It now only

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HARRY BARRETT, Editor, Fishing News

Iceland's big new factory

THE magnificent new plant of Isbjörninn hf — the biggest and most modern fish processing and freezing factory in Iceland opened in Reykjavik last month.

The opening ceremony took place five years after work on the site began.

Isbjörninn will produce fillets and blocks, mainly from cod and redfish, for the US and Soviet markets.

It has a full range of Baader processing machinery, including the new 189V fillet.

Up to six lines are initially planned for the spacious trimming and packing hall, and there is considerable room for further expansion.

Fillets are frozen by a battery of ten big APV Parafreeze plate freezers of 1.5 tons/hr each, and there are three vertical freezers for mink food production.

Cold storage capacity is 1,200 tons at 28°C and there is a 50 ton/day flake ice making plant and a 450-ton ice store.

Particularly impressive is the high degree of automation that has been built in — particularly on the trimming, weighing and packing lines — for maximum economy and efficiency.

Computer

Yield control is tightly monitored by computer and the fish are automatically size graded so that the filleting knives can be precision adjusted for top yield.

If the IBM system enhances yield by just two or three per cent its installation will have been worthwhile, says Isbjörninn management.

Sick bay

Another eye catcher is the standard of facilities for its workers, which are second to none in Iceland. The plant even has its own sick bay manned by trained medical staff.

The new factory, which has direct quayside access, is supplied by its own stern trawlers, including two new Norwegian ships of 440 tons each — the *Asger* and the *Ashjörn*. Both ships were built by the Fleskerfjord yard and are equipped for boxing at sea.

STATE HOLDS ON TO PERU'S MEAL SALES

THE marketing of fishmeal and fish oil in Peru will continue to be controlled by the State, according to fisheries minister Vice-Admiral Francisco Mariategui. Other fishing and canning facilities are being sold back to private industry.

Pescaperu, which previously handled all anchovy fishing and processing, sold off its fleet in 1976. It now only

AUSTRALIA STAKES ANTARCTICA CLAIM

...but can she exploit these krill-rich waters?

official announcement of its declaration pending further negotiations.

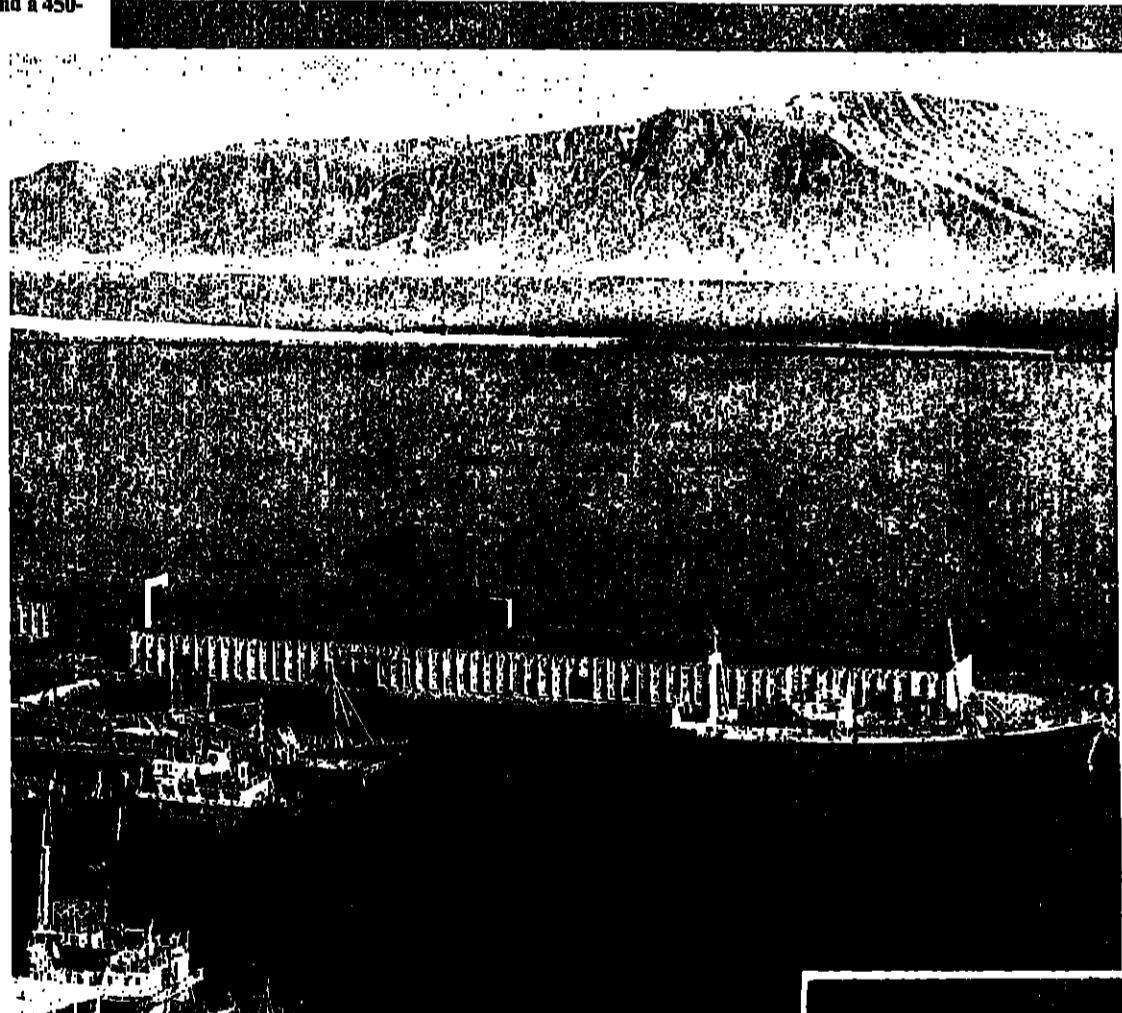
News of the decision came as a surprise to local industry sources, since earlier this year the government was advised by its own Department of Environment that any territorial claims in Antarctica were unlikely to survive international challenge.

Informed sources say that the Australian government has decided, for diplomatic reasons, to delay the

exploit even of its extension of her own fishing zone to 200 miles.

This extension has added a new fishing zone about equal to Australia's land mass at a time when Government curbs on public staff have left the country seriously short of marine scientists.

In the immediate future Australia can neither exploit the Antarctic waters, nor police them.



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It's been a good year for Chile

IT LOOKS as if Chile's fish and shellfish catch will be the best in 20 years, surpassing 800,000 tons.

The minister said that this year's industrial catch should reach two million tons by the end of December as predicted earlier this year. Fishmeal exports, he said, would total US \$190 million.

Admiral Mariategui said he did not yet know when anchovy fishing will be renewed north of Ilo as this depends on results of studies by Peru's marine institute. It would not be before next year, he said.

Sold fleet

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Comment

Boston shows the boom

IF THERE is gloom over the state of the American economy and the value of the dollar, there was little sign of it during the four days of the US Fish Expo 78 in Boston in October.

The advent of the 200-mile limit has revived many sections of a once-declining fishing industry. And this was apparent at the 12th showing of Fish Expo since the exhibition began at a race track near Boston in 1967.

The show in Seattle (it alternates each year between west and east coasts, and Seattle and Boston) drew a record 265 exhibitors in 1977.

Usually Expo is expected to be bigger and busier on the west coast. But the developments in US fishing are not confined to any one region. There are big things happening in the east coast ports and the industry is growing, despite the restrictions that America's ever-cautious bureaucrats impose on it.

To display the variety of equipment and services now being offered, 313 exhibitors packed out Boston's Hynes Veterans Auditorium and overflowed onto a floor above.

They drew a record number of visitors, and they appear to have taken a record volume of orders for equipment that ranged from sea boats to stern trawlers.

JOINT VENTURES

Joint ventures by a group of Canadian companies in Nova Scotia, by British and by Norwegian manufacturers did particularly well.

The ten firms taking part in the British venture reported more than 1,600 enquiries and nearly £125,000 in sales. In addition, of course, there could be business worth several hundred thousands more resulting from the exhibition.

The Scottish firm Lossie Hydraulic Company, for example, showed seine net reels and small power blocks. By the end of the exhibition, these all had "sold" notices over them with the name of their American buyer. And Lossie's David Tait was preparing to set off on a visit to New England ports to advise owners on how to fit out their boats.

New England fishermen are very interested in Scottish seining. They have been watching its application further north in Canada and they have been encouraged by trials of the method carried out by Bob Taber and his gear technology team at the University of Rhode Island.

CUSTOMS DUTY

This interest brought business to another British firm, Bridport Gundry, which was at Expo on the stand of its US subsidiary Brownell & Co. of Moodus, Connecticut.

Brownell was showing seine nets and other gear by Jackson Trawls of Peterhead. Net importers, however, pay heavy customs duty in America and so this equipment may eventually be made by Brownell for its British associates.

Another British net maker, Gourock, was at Expo and its Canadian company, Gourock Industries of Nova Scotia, sold six of its nets at the show and was expecting to sell more soon after.

TRAWL MODEL

It displayed a model of the Polish rope wing mid-water trawl which is being used off Oregon by Captain Barry Fisher, by Nickerson in eastern Canada and by many other trawlers.

The success of the small group of British exhibitors was matched by that of the Norwegian firms. The Simrad stand, showing the company's variety of electronic fish finders, was particularly busy. One notable sale was the first Situation Display sonar system to go to an American vessel.

Developments in the American fleet have been not so much in the size of vessels or the intensity or range of the fishing, but in the sophistication of equipment and in its quality.

There are still many old, crudely equipped and inadequate boats. But they are moving out of the fleets to be replaced by vessels which, if not always bigger, are closer in quality and in performance to the top boats working the fisheries of Europe.

fishing news international

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Subscriptions (surface mail,
and including the UK): £10
(US\$20) a year. Europe, fast
delivery rate £15 (US\$30) a
year. Outside Europe, airmail
rate: £18 (US\$32) a year.

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Storm
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FIND THE FISH OR LAY UP SHIPS!

SUFFERING from a sharp drop in expected catches in the Barents Sea area, Norwegian trawler owners were last month putting up £20,000 to £30,000 to fund a short-term fish finding expedition. And they were asking for about £50,000 from the Fisheries Directorate.

The situation is critical, said Trawler Association general secretary Arvid Wiik. He warned that all 86 wet fish ships would soon be laid up if alternative catches could not be found.

It was planned to extend the search further north-east and west in the Barents Sea where the Russians have been working for some time.

The serious and prolonged drop in Barents Sea catches in the summer and into the autumn is causing serious concern among Norwegian researchers.

They fear that the slump, which has forced the closure of factories and the laying-up of trawlers, may portend a series of bad years due to depleted stocks.

In their annual August

A DECISION by the Canadian government to close its fisheries product laboratory in Halifax, Nova Scotia, has touched off a storm of protest.

Fisheries Minister Romeo LeBlanc has promised to review the closure scheduled for April 1.

About 35 to 40 laboratory staff are expected to be laid off.

Much of the opposition to the closure has arisen from fears that the government is cutting off badly-needed research at a time when companies need to know more so they can gain new business.

Supply situation critical as Norway owners mount Barents sea search

September assessment of white fish in the Barents Sea, Norwegian research vessels collected evidence of heavy overfishing. According to a Fisheries Department official

barely 240,000 tons of a 1969/70 spawning class remained.

Faced with evidence of depletion, Norwegian researchers recommended that

the 1979 haul of Arctic cod should be slashed by nearly 30 per cent, from 850,000 to 600,000 tons.

The ICES recommendation was a cut to 500,000 tons. But early in November the Norwegian-Soviet Fishery Commission agreed on a higher figure of 660,000 tons. This will be divided equally between the two countries after allocating 90,000 tons for division among third countries.

Up to 80,000 tons of the Russian quota can be caught in the Norwegian zone, while the Norwegians can take up to 30,000 tons in the Soviet zone.

The 90,000-ton quota for other countries is made up of 45,000 tons in the Norwegian zone, 30,000 tons in the Soviet zone and 15,000 tons in the Spitzbergen zone. Third country vessels can be licensed by each of the two nations to take up to 7,500 tons in the grey zone of the Barents Sea.

The total quota for capelin in 1979 has been set at 1.8 million tons for the winter and summer fisheries. The Norwegian claim for 75 per cent of the total allowable catch was not agreed. Settlement was made at 60 per cent Norway and 40 per cent Russia, less than the Norwegians hoped for but more than they feared.

This Norwegian quota is divided into 550,000 tons for the winter and 525,000 tons for the summer fishery. There is a total ban on capelin fishing by both nations between May 1 and August 15.

Environment Minister Len Marchand said the ships will remain in service at least until 1981 while a satellite monitoring system is established.

WEATHER SHIPS TO STAY

CANADA has reversed its decision to phase out two weather ships operating off the Pacific Coast.

Environment Minister Len Marchand said the ships will remain in service at least until 1981 while a satellite monitoring system is established.

US-Canada dispute goes to the top

UNLESS a settlement is reached by the end of the year in the lengthy fishing boundary disputes between the US and Canada, both governments will intervene.

This was announced last month by Canadian External Affairs Minister Don Jamieson after talks with US Secretary of State Cyrus Vance.

The dispute erupted in 1977 when Canada claimed a 200-mile zone which overlapped that of the US.

Canadian fishermen have been barred from American waters and vice versa after Canada suspended an interim fishing agreement this summer. The agreement was intended as a temporary measure while negotiators tried to find a lasting solution.

While a settlement appears close for three disputed boundaries on the west coast and in the Arctic, little progress has been made on the coveted Georges Bank in more than a year.

Mr. Jamieson said that as a result of his talks with Mr. Vance he was "quite satisfied that we can make significant progress on a fisheries agreement."

Russia to propose deal with Greenland

RUSSIA wants to set up a joint venture for fishing and fish processing in Greenland.

Soviet Fisheries Minister Aleksander Isjkor has said that proposals for a comprehensive fisheries co-operation project will be put forward shortly.

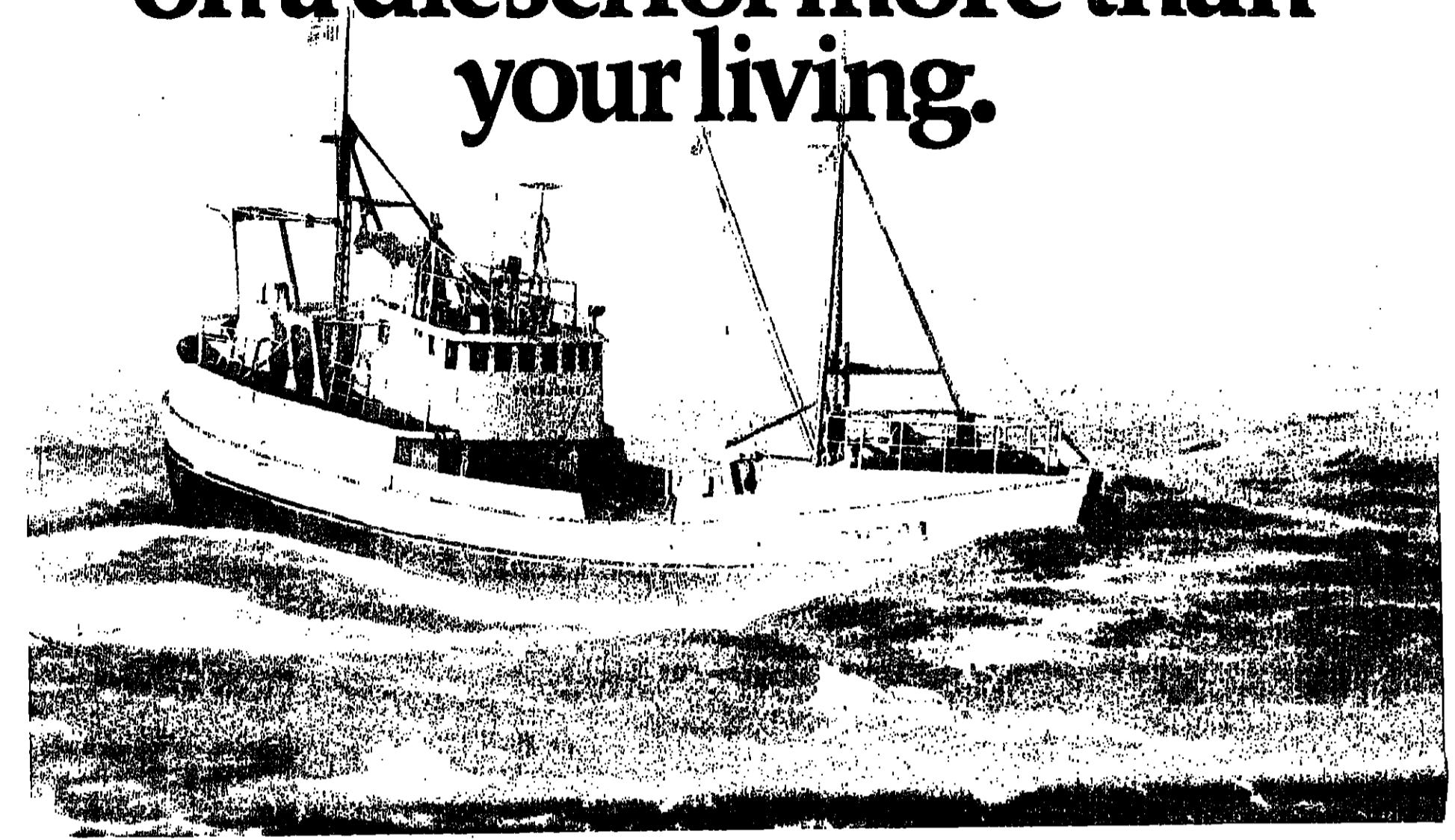
It would be on a 50:50 basis and Russia would guarantee the sale of all the products.

Decline

But Mr. Jonathan Motzfeldt, a leading Greenland politician, is reported as saying that a project on the scale the USSR appears to be contemplating might not be compatible with declining stocks of most fish in Greenland waters.

Greenland's Fisheries Minister has said that he will look at the Soviet proposals. He added that relations with the EEC would have to be borne in mind.

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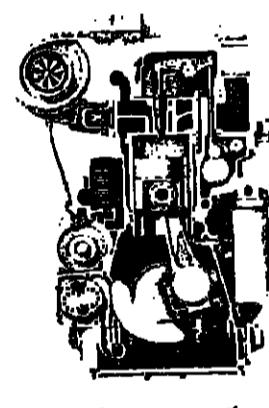


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Harbour project approved

THE INDIAN central government has given technical clearance to a Rs 12.5 million (about £7.5 million) project of the Gujarat government to develop a major fishing harbour at Porbander. This harbour on the Saurashtra coast fronts the Arabian Sea.

The Porbander project envisages construction of an additional jetty and other landing facilities for trawlers and smaller fishing craft. It would also provide ice-making and fish freezing plants, and cold storage.

Gilbert Buchan, president of the Scottish Fishermen's Federation, looks ruefully at the tiny herring pouring into the market at Skagen in Denmark. By British standards fish like this is too small to catch. Mr. Buchan and other leading representatives of the UK fish industry were on a tour of major Danish fishing ports



Tour gives UK fishing chiefs cue for some tough talking

DENMARK WAS warned last month that its fleet would have to be drastically cut if disaster was to be avoided in the North Sea.

With the full might of the Danish fleet on display to a visiting team of high-level British fishing representatives, the president of the Scottish Fishermen's Federation, Gilbert

Buchan, said: "I can only be impressed by the way you have organised your industry — but it frightens me to death. Controls are vital with super-catching power like this."

The lavish hospitality provided by the Danes during the tour did nothing to blunt some very straight talking, writes Harry Barrett, Editor of the UK paper *Fishing News*. But there was some hint of movement at industry level towards Britain's position on exclusive limits and industrial fishing for herring.

"If the overall EEC package is right for us we would compromise by backing a 12-mile exclusive limit for Britain," said Laurits Toernaeus, chairman of the Danish Sea Fishery Association. "And we would go along with an all-time ban on industrial fishing for herring," he added.

This view was backed by fishermen in other Danish ports although there was no enthusiasm for a compromise among Ministry officials in Copenhagen. What did become clear was that the "right package" for Denmark must include a relaxation of the Norway pout box — that disputed part of the North Sea which has been closed by Britain to protect white fish breeding stocks.

No harm

Laurits Toernaeus called for areas of the box to be opened to boats fishing for Norway pout where there would be no harm to other species and suggested that fishing should be allowed to take place below 70 fathoms.

Gilbert Buchan, however, was in no mood for apology over Britain's action. "Our white fish catches have been getting smaller and Britain is the only country in the EEC to take conservation measures," he told the Danes.

"With the introduction of the Larssen trawl you built up an industrial fishery for herring. You cleaned this up and now you have turned your attention to Norway pout."

George Crawford, chairman of the National Federation of Fishermen's Organisations, pointing out the value of the pout box, told the Danes that as a result of this measure new broods of haddock and whiting were appearing in the North Sea.

No deal

He referred to Britain's near total ban on herring fishing and explained the predicament she had been placed in: "To get 3,000 tonnes of herring to keep our fishermen going, we would have had to give the EEC 30,000 tonnes," he said. "We decided to have no herring at all and to give the stock."

The only hope given to the Danes over herring was a guarded comment by Austin Luing, director-general of the British Fishing Federation:

45 out of Iceland's 106 purse seiners* carry an ABAS net winch.

* longer than 100 ft.

Food for thought?

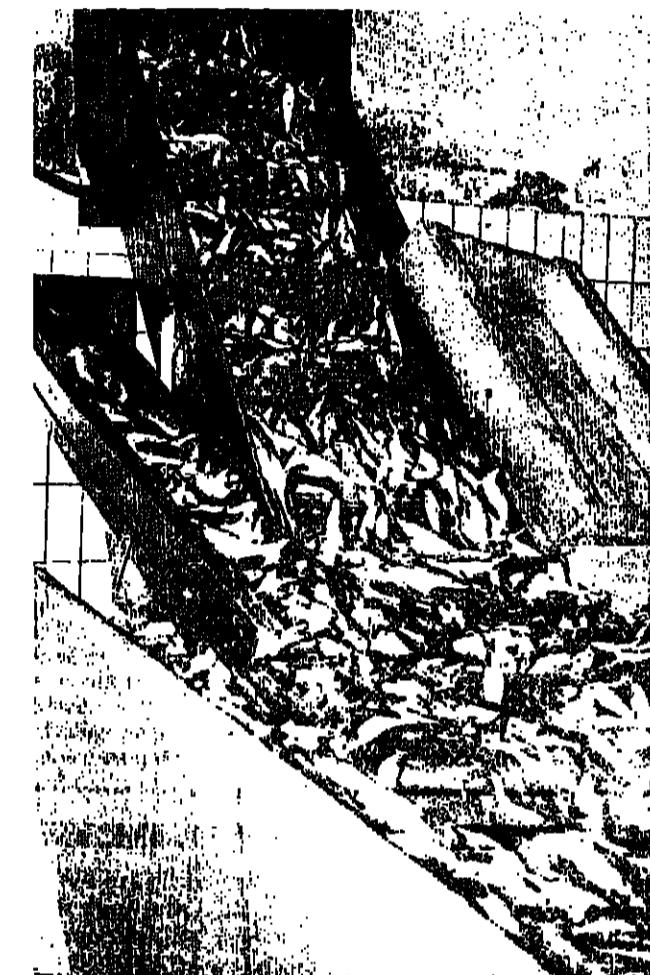


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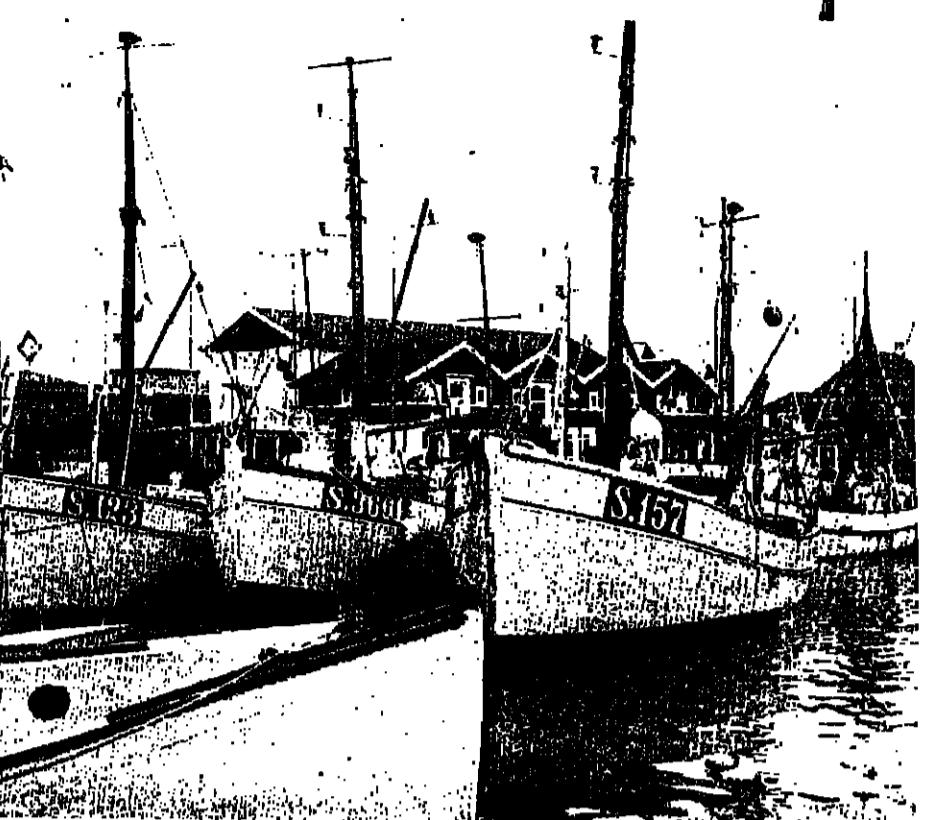
ABAS

cut fleet or face disaster



Left: Herring, probably about 18 months old, are scooped up into the conveyors of a Skagen fish factory. The size of the fish came as a shock to the visiting British delegation.

Right: Inshore boats at Skagen.



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TUNA TROUBLE FOR THE USA

PROPOSED fishing zones in the South Pacific region are widely dispersed and in many cases the islands and territories are so small that they do not have the means to police 200-mile economic zones. The main fish of value throughout the region is the migratory tuna, although efforts are being made (with the help of FAO and other agencies), to widen and diversify the resource base.

It is tuna which is at the heart of the problem over membership of the United States in the hoped-for South Pacific Fisheries Agency.

The Americans are the dominant people in the tuna business. They already have a position regarding the exploitation of migratory tuna in their arrangements with the Inter-American Tropical Tuna Commission, although they also come up against problems there.

It is not US policy to recognise coastal state sovereignty over migratory fish in 200-mile zones, although the US will adopt a different stance if it is a member of the controlling fisheries body.

But this flexibility is not, apparently, enough for the independent island countries. Fiji's Prime Minister, Ratu Sir Kamisese Mara, for example, says that a South Pacific forum should be for leaders of



the independent countries able to make decisions on the spot.

He argues that the United States, Britain and France would be represented by non-decision makers.

He has indicated that Fiji might join Papua New Guinea and the Solomons to form a

separate fisheries control organisation.

In Port Moresby in October, the Prime Minister of Papua New Guinea said that the United States would only accept another country's right to manage tuna resources within a 200-mile zone on conditions acceptable to

US fishing interests. But coastal states had a right to determine who would fish within their economic zones. New Zealand's Prime Minister R. D. Muldoon said he had received assurances from the United States at top level that the rules of the proposed South Pacific

Fisheries Agency would be binding on the US if she became a member.

The line-up of opposing views was apparent when the South Pacific Forum met in September on the tiny island of Niue.

This begins to appear like a



line-up of the metropolitan powers with some of their former dependencies supporting the United States one side, and the independent island nations on the other. People

opposed to US entry, on their own terms, were Fiji, Tonga, Gilbert Islands, Nauru, and New Caledonia.

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Illustration of a large skipjack tuna fish.

Mexico quits Commission

-and Costa Rica will follow

THE FATE of the Inter-American Tropical Tuna Commission hangs in the balance. Whether it lives or dies could be decided in this month, reports William C. Miller from San Diego.

Such was the consensus of US observers at the annual meeting of the commission in October at Tokyo where no action was taken on a new yellowfin quota nor towards healing a rift among the Latin American countries.

Despite a lack of progress at the annual meeting, all eight IATTC countries were represented by one or more commissioners at Tokyo. Observers from Chile, Peru, Venezuela, Spain, Korea and Taiwan also attended.

Mr. Joseph said that while it is highly unlikely that a new treaty can be effected next year, it is possible that a conservation programme can be adopted.

Mexico withdrew from the commission last month and Costa Rica leaves in April.

This will not sink the commission that administers the yellowfin conservation programme in the eastern tropical Pacific. There will still be six nations left -- the US, Canada, Japan, France, Panama and Nicaragua. But it will put a big hole in it.

Illustration of a skipjack tuna fish.

It is proposed that the 1979 quota for yellowfin be set at 165,000 to 210,000 tons for the member nations. It appears that about 185,000 tons of yellowfin will be landed this year in the Commission Yellowfin Regulatory Area.

The rift in the IATTC resulted from a desire by Mexico and Costa Rica to get a larger share of the yellowfin catch allowances.

The US fleet of some 140 purse seiners annually takes well over half of the catch in the CYRA. If the commission breaks up, it will be a case of one of the founders leading in the walkout.

In IATTC meetings earlier this year, Costa Rica proposed a new licence fee for all IATTC tuna ships, based on net tonnage. Mexico urged a fee based on total tuna landings.

Either or both would shift a major share of the cost to the US fleet.

Illustration of a skipjack tuna fish.

Costa Rica and the USA set up the commission in 1949-50

to prevent depletion of yellowfin through overfishing.

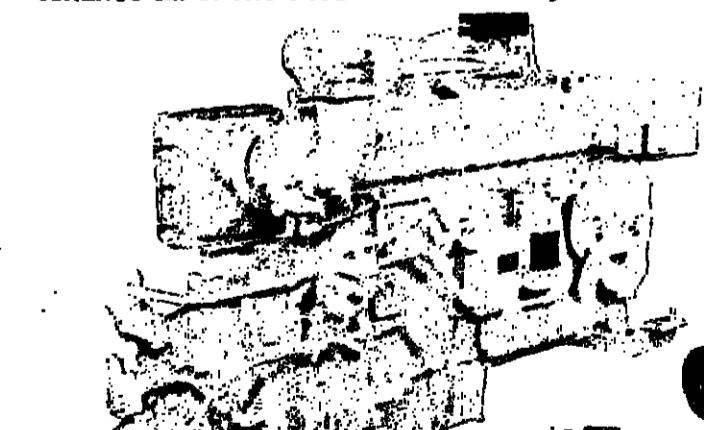
Should a compromise be

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BET 707

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The fish trade is growing and prices are rising. These are two of the consequences of the world-wide extension of coastal fishing limits to 200-miles. As the big distant water catchers are forced out of the new zones, so more fish and fish products are moving into international trade.

Many products are already too valuable to the seller and too much needed by the buyer to be restricted to the speed of a ship, train or truck. The industry now needs the aeroplane for its top-priced products.

The Flying Tiger Line, the world's largest air freight carrier, was at Fish Expo 78 in Boston in October to show how it can help.



Bluefin tuna caught off the US Atlantic coast are packed in temperature controlled containers for transport to Japan.

FLYING FISH!

US jet link to growing markets

A POPULAR sushi shop in Tokyo sells bite-size pieces of quality tuna for the equivalent of 33 US cents while other local shops charge up to \$1.60. Frozen king crabs in Nemuro, Japan, fetch \$2.60; in Sapporo, only 200 miles away, the same crabs sell for \$13.

These dramatic price ranges reflect the turmoil in a fishing industry still trying to adjust to the impact of United States, Russian and other 200-mile limits.

Seafood prices in Japan have been soaring recently, with overall increases of more than 30 per cent, as wider limits force many Japanese vessels out of traditional coastal waters off the USA and USSR.

On the northern island of Hokkaido, for example, some 2,500 people have been thrown out of work and 1,400 vessels made idle by cuts in catches following the Soviet claim to a 200-mile EEZ.

But coastal fisheries, such as those of Alaska, have an abundance awaiting the local catchers, and the processors and traders enterprise enough to make use of the new opportunities.

Helping them find outlets is the Flying Tiger Line which, in mid-October inaugurated a scheduled airfreight service between Anchorage and Asia. The giant airfreighting service transports cargo between Anchorage and Tokyo, Osaka, Seoul, Taipei, Hong Kong, Manila and Okinawa.

Flying Tiger has lifted more

than nine million lb of seafood from the United States to Asia in 1978, an increase of some 50 per cent over the last year.

"The export rate could

mushroom if seafood shippers would take advantage of airfreight to introduce and market new types of fish throughout Asia," said Leland Lat, Flying Tiger International marketing manager, at Boston Fish Expo.

Airfreight shipments includes live or fresh fish such as tuna, salmon, salmon roe, eels, sea urchin roe, herring roe, lobsters and crabs.

"Species such as clams, scallops, squid, mussels and certain types of lobsters and crabs have also been successfully transported in small sample shipments," he added.

"We are continuing our research to design new services for these underdeveloped varieties of seafood which could open up new markets."

The fragile egg clusters are hand-packed in salt and placed in 22lb wooden boxes.

When these arrive at Anchorage terminal, they are loaded onto sturdy cardboard pallets measuring 29 by 33 inches. Nine of these disposable pallets fit on a standard 88 by 125 inch airfreight pallet.

Plastic and absorbent cotton material is placed round the eggs to prevent leakage.

"Flying Tiger has assembled professional marketing and sales personnel locally who are tuned to the needs of Alaska's fishing community," said Mr. Shaw.

"We constantly strive to assist companies like Swiftsure by expanding markets for new varieties of seafood. For example, clams, scallops and crabs continue to grow as an export possibility."

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WHILE an FAO study shows that fish is more important in many diets than is usually thought, an FAO project has been proposed to direct a greater share of the world's catch to direct human consumption.

Reports by

CEDRIC DAY

Pictures by FAO

Top of the pile but still not enough. Like millions of other children in developing countries, this boy looks to fish to provide a large proportion of the animal protein in his diet.



ALL THE NEEDS

A NEW LOOK at fish as high nutritional food — that is, as a contributor of animal protein to the human diet — shows that it plays a far more significant role than is usually accorded it by people who present it in terms of quantity, not quality.

By so doing they downgrade its importance, asserting that it contributes only about two per cent to human food supplies.

As one economist remarked to me recently: "It wouldn't matter much if all the fish resources in the oceans and seas were wiped out."

Tables on the consumption of fish as a contributor of animal protein, recently worked out by Wolfgang Krone, Chief of the Fish Utilization and Marketing Service in FAO's Department of Fisheries, show how mistaken is this view.

In his first table dealing with the "importance of fish as food," his figures indicate that fish contribute some 40 per cent of the animal protein in the diet of about 15 per cent of the population in developed countries, 21 per cent of the people in developing countries and five per cent in central planned economy countries.

At the other end of the scale, over 70 per cent of the population in developed countries derive less than ten per cent of the animal protein content of their diet from fish, the figures for the other two

groups being 26 and five per cent respectively.

Other significant figures in the table show that 47 percent of the population in developing countries derive ten to 19 per cent of their animal protein from fish, while 63 per cent of people in the countries with centrally planned economies derive 30 to 39 per cent.

Calculated

As Dr. Krone points out, the figures in this table have been calculated on the total supply of proteins per head per day. The fish contribution is in relation to the supply from meat of various kinds, including that of poultry, and of eggs and milk.

However, Dr. Krone has prepared a second table which, perhaps, reflects more fairly the role of fish as a supplier of animal protein in the human diet. In this table (which we reproduce), eggs and milk have been eliminated as being a "non-competitive" bulk terms the contribution of

It's a in the

source of protein supply, and the competition limited to meat of various kinds. As a result, the importance of fish as a source of animal protein stands out even more clearly as the table shows.

In total, more than a third of the world's population derive some 40 per cent of their animal protein from fish. In developing countries alone, fish provides about 60 percent of the animal protein the people consume.

Such world averages "don't mean anything," said Dr. Krone, as they deal in quantity and do not take any account of quality. While in fish to human food supplies is

Contribution to total animal protein intake	Developed countries (% of population)	Developing countries (% of population)	Centrally planned economies (% of population)
More than 40%	16	57	5
30 to 39%	6	2	86
20 to 29%	1	9	3
10 to 19%	38	22	3
Less than 10%	39	10	3

small, in the important matter of supply of protein the contribution is of the greatest importance to hundreds of millions of people.

This view of the contribution of fish to the human diet gives a much fairer picture of its significance than the world averages of food supply which are usually quoted.

Relative to this whole question is the view expressed by Professor Nevin S. Scrimshaw, PhD, M.D., Institute Professor and Head of the Department of

Nutrition and Food Science of the Massachusetts Institute of Technology, Cambridge, USA, in the WO Atwater Memorial Lecture he delivered last year.

Contended

In it he contended that the real protein and calorie needs of the poor masses of people in the developing countries have been seriously underestimated.

The total availability of protein and calorie, averaged out, gives a misleading view of the situation since income largely determines the amount and quality of food consumed.

He said comparison of average consumption "gives an unreliable estimation of the prevalence of calorie deficiency in a population and an even more misleading impression as to the prevalence of protein deficiency."

Such average figures "tell little about the proportions of the population deficient in these dietary components." Such a situation indicates the immense importance of fish in the diet of the poorer mass of people in the world.

These are aspects of fish as food which should be more



The dinner goes home. A satisfied buyer takes her purchase away from Mopti market.



ABOVE: The family meal. A Bozo woman of the fishing village of Face Nimitongo prepares a fish meal outside her hut. The village is on the Niger River, 13 km from Mopti in Mali.

Plan to boost the supply

FAO has proposed a world-wide research project to "increase the utilisation of fish for human consumption" as a help towards meeting an expected increased demand for food fish of 100 million tons by the end of the century.

The FAO view is that the increased demand can be met from conventional and unconventional resources (such as oceanic cephalopods and mesopelagic fish) but that "this will not be an automatic process."

For example, while the production of food fish has increased in developing countries in recent years, their share in food fish consumption has decreased. This is largely due to the higher purchasing power of developed countries and those with centrally planned economies, but this would call for the expansion of the fisheries, says FAO, and the introduction of new industrial techniques.

A primary requirement is "to ensure that low product cost is achieved by high volume throughout" and "to identify and develop the means of marketing the products." The developing world has not the means for doing these things alone and will have to be assisted by the developed countries.

To reverse this trend and

direct the catch of developing countries more to direct use as food will, FAO contends, call for "a determined research effort" leading to provision of fishery products "within the reach of low-income sections in developing countries."

The fact that the largest stocks of available conventional fish — small pelagic species — are close to many of the developing countries is a favourable situation.

So far, such stocks have not been exploited or have largely been used to provide raw material for animal feed.

Requirement

It is estimated that some 40 million tons of small pelagic fish, including the catch at present being converted to fish meal, could be utilised for human consumption but this would call for the expansion of the fisheries, says FAO, and the introduction of new industrial techniques.

On the other hand, the technically advanced countries have not had to exploit fishery resources for feeding their populations. They have converted much of their catch into animal feed, especially where this fish can be harvested at low cost.

To reverse this trend and

Instead of being dried in the open air, this fish caught in Mali in West Africa is smoked in ovens provided by a UN/FAO World Food Programme project.

live has already been made. The Danish government is giving assistance through a regional co-operative programme in fish technology, link in such work Asian and African institutes to those in the technically advanced world.

● Enlist the support of industry in the work;

● Co-ordinate other internationally supported projects in this field;

● Promote the design and construction of new equipment for handling and processing small pelagic fish and promote the utilization of such fish.

FAO proposes to act as a co-ordinating body in such work as this and to promote research into industrial technology for making the fullest use of small pelagic fish resources, involving institutions in both the technically advanced and developing countries. It is estimated that the cost of implementing the results of such research will run into tens of millions of dollars.

Briefly the FAO proposed project would seek to:

● Promote research through regional co-operative programmes in fish technology, link in such work Asian and African institutes to those in the technically advanced world;

● Enlist the support of industry in the work;

● Co-ordinate other internationally supported projects in this field;

● Promote the design and construction of new equipment for handling and processing small pelagic fish and promote the utilization of such fish.

While funds for projects are expected to come from various sources, such as those provided by the Danish and Norwegian governments, funds for FAO's key project will, if approved, be provided mainly through UNDP.

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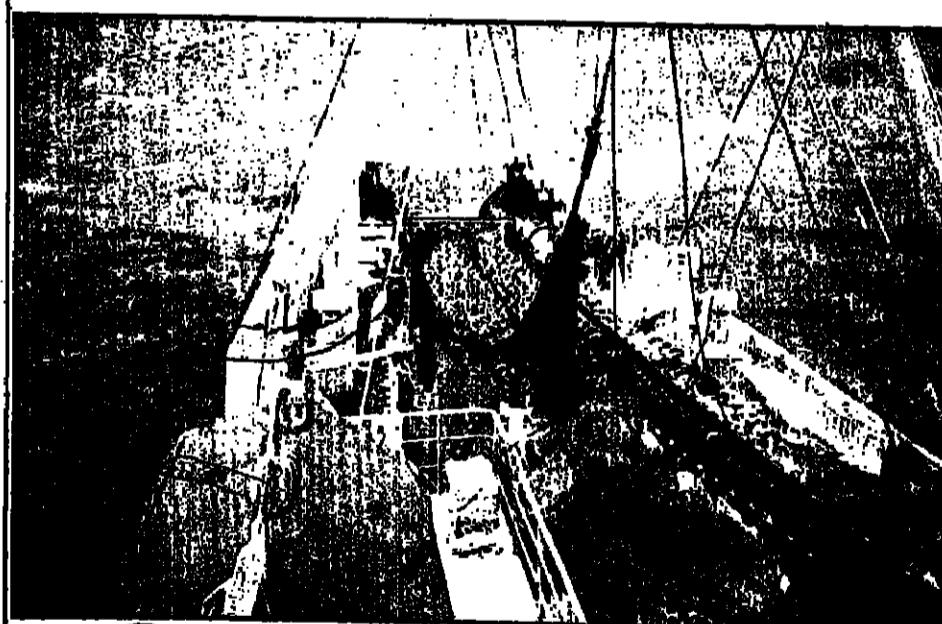
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BOATS & BUILDERS

FREEZER FOR GHANA - Italian yard delivers first of four big ships

THE FIRST of four 1,500 gross ton stern trawlers for the State Fishing Corporation of Ghana has been completed at the Italian yard of Societa Esercizio Cantieri. The vessels are designed for deep sea pelagic, semi-pelagic and bottom trawling.

Overall length is 73.2 metres (240 ft) with a beam of 12 m (39.4 ft), depth of 7.9 m (25.9 ft) and maximum draft of 4.7 m (15.4 ft).

The hull has a fine clipper bow with a bulb below the water and there is a centre line stern ramp.

Propulsion is by a Deutz type SBV 6M 540 engine of 3,000 hp at 600 rpm driving a Lünen controllable pitch propeller through 3:1 reduction gear.

Auxiliary machinery is also Deutz powered: three 735 hp type BA 12M 816 LLK-R diesels are each coupled to an Alsthom alternator producing 550 KVA 380-volts. A 105 hp Deutz diesel powers an 80 KVA harbour generator.

All deck machinery is of Norwinch manufacture and the hydraulic pumps are electrically powered.

Two 13-ton trawl winches are located aft under the gullwings. There are two five-ton sweep line winches, two eight-ton gillson winches, two anchor winches and two 2.5-ton cupstamps.

The trawler is equipped with a blast tunnel freezer (10-tons a day) and five plate freezers with a total capacity of 30-tons a day. These were supplied by Samson Babcock and the electrically-driven refrigeration pumps are by Howden.

The hold is maintained at a temperature of -25 deg C. Its capacity is 1,000 cu m and it is located forward of the engine compartment with access from the processing deck and from the wheelhouse.

Electronics

Electronic equipment includes two Decca RM 1226 radars, a Pluth auto direction finder type GEE 277, a Redifon Omega navigator and Anschultz gyro compass and autopilot.

Fish finding equipment is by Simrad and comprises an SU4 searching sonar, a trawl position locator and two EX38D echo sounders. Radio equipment is by Duncrook.

With the first of these

trawlers now complete the remainder will follow at approximately four monthly intervals.

Darragh's double-ender

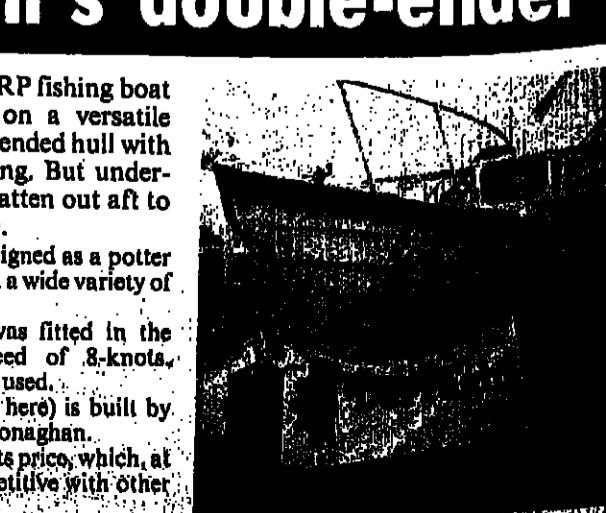
THIS 24 ft (7.3 metre) GRP fishing boat from Ireland is based on a versatile Norwegian-style double-ended hull with simulated clinker planking. But underwater the normal lines flatten out aft to increase the space inside.

The fishing version is designed as a potter with the wheelhouse aft, but a wide variety of layouts are possible.

A BMC 36 hp diesel was fitted in the prototype to give a speed of 8-knots. Alternatively engines can be used.

The *Kerrig 24* (pictured here) is built by Darragh, Newbliss, Co. Monaghan.

Particularly attractive is its price, which, at £5,500, makes it very competitive with other similar craft.



Foam sandwich crabber

THE Gaspe shipyard in Quebec has delivered the first of two GRP combination gillnetter/crabbers to its parent firm Quebec United Fishermen.

The 45 ft (13.7 metre) long hull is sandwich constructed with an 'Airex' PVC foam core. The deck is marine ply on fir beams with a GRP surface laminate.

The boats are being built on a one-off basis without a female mould. This permits a short series at a reasonable price, says Gaspe.

Named the *Ivan C*, the prototype has a beam of 14 ft (4.3 m), loaded draught of 4.5 ft (1.4 m) and gross tonnage of 20 tons.

Her hold provides room for 30,000 lb of fish and ice and fuel and fresh water capacities are 560 and 40 gallons.

Propulsion is by a Detroit Diesel type 4V-71 developing 115 shp at 1,800 rpm and turning a three-blade 32 in by 24 in propeller through 2.5:1 reduction gear.

Navigation

Navigational aids include a magnetic compass, radar and echo sounder and the vessel carries an ssb radio telephone.

Accommodation is provided for a crew of four.

The two Quebec United boats will work out of Rivière-aux-Tonnerres on the St. Lawrence river. They are to be leased to co-op members and ownership will be transferred to the fishermen after the first year.

A third, similar boat — a gillnetter — is being built for Curadeau et Frères Inc of Rivière-aux-Renard.

New research

vessel is first from Peru yard

PERU'S navy shipyard has launched the first oceanographic research ship built in the country.

West Germany supplied aid and 60 per cent of materials, including equipment, machinery and electronic instruments.

The 1,980-ton ship, named the *Humboldt*, has a length of 76 metres (249 ft); a breadth of 12 m (39 ft); draught of 4.35 m (14 ft) and speed of 14 knots.

She has a fish hold capacity of 160 tons and carries a crew of 48.

She is to be equipped with fishing, oceanography, microbiology, photography, chemical and data processing laboratories.

The *Humboldt* is being built for Imarpe, the Peruvian marine institute. One of her jobs will be to research the food fish resource in Peruvian waters.



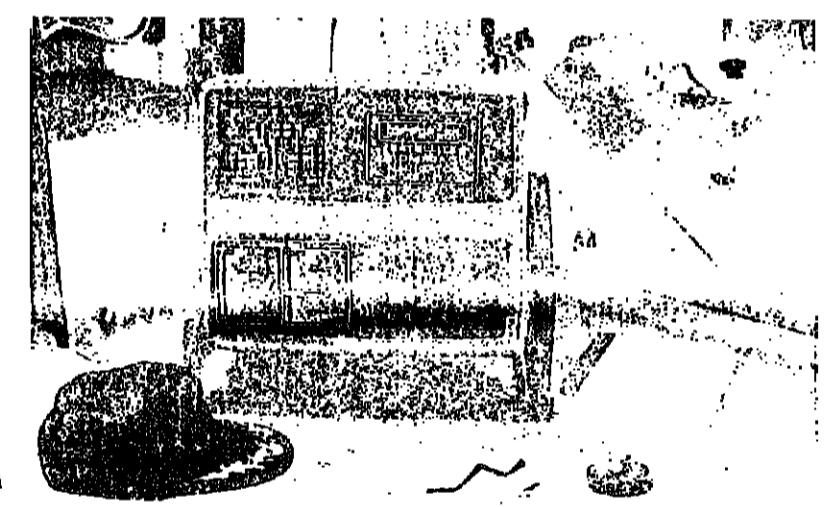
**Carrier
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THE *Almaznyy Bereg*, first refrigerated transport ship of the Kristall type from the Rostock yards in East Germany, has joined the Soviet fishing fleet.

She is 150 metres (492 ft) long and has a carrying capacity of 10,000 tons.

All refrigerated transport ships of this class building in the GDR for the Soviet Union will carry equipment for purifying water polluted by fuel oil and solid waste.

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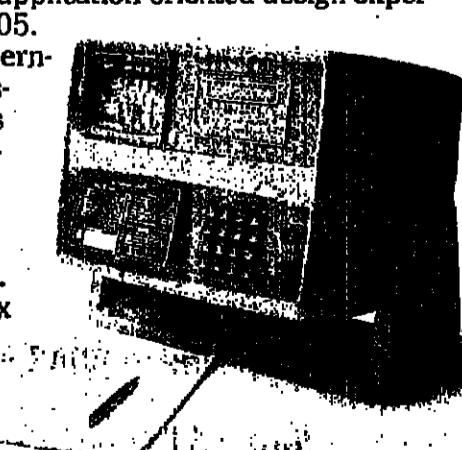
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BOATS & BUILDERS

ONE FOR ACHILL ISLAND

ANOTHER recent completion by an Irish yard is the 19.8 metre (65 ft) transom stern trawler *Aelindrew* for Michael Fallon of Achill Island, Co. Mayo.

The Irish Sea Fisheries Board yard at Dingle, Co. Kerry built the vessel and financed her under the Marine Credit Plan.

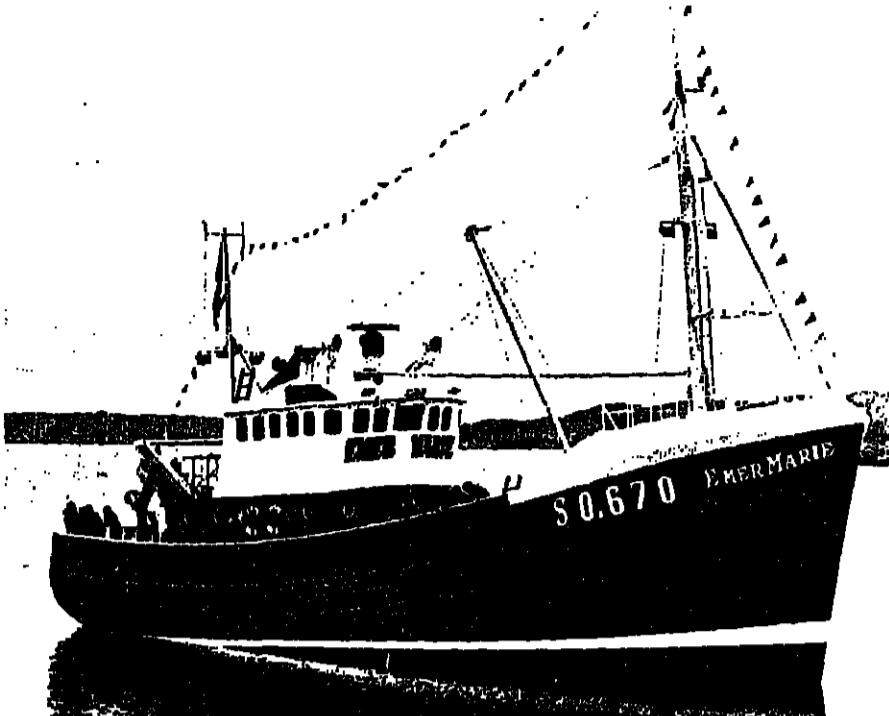
Iroko hull

The hull, which has a beam of 22 ft and draught aft of 10.5 ft, is carvel constructed of iroko and native oak. Wheelhouse, deckhouse, engine seatings, masts and whaleback are steel.

Propulsion is by a Kelvin TASC8 diesel engine of 415 hp at 1,200 rpm driving a Kelvin fixed-pitch propeller through Reintjes 4:1 rafter reduction gear.

The vessel will fish with a Jensen type 85 hydraulic seine/trawl winch, and she has a Lossie GHI Net Hauler, Lossie 28 in power block and Lossie LWI one-ton landing which.

Aelindrew is very well equipped with electronic aids. Fish finding gear, including a LAZ 72 sounder and LAZ 62 Blackloupe, was supplied by Elac, and Sailor furnished her radio range.



ever built in Ireland

THE LARGEST wooden fishing vessel ever built in the Republic of Ireland has been completed at the Irish Sea Fisheries Board's yard in Baltimore, Co. Cork.

Named the *Emer Marie*, the 86 ft (26.2 metre) iroko and oak trawler is for owner/skipper Charlie Gallagher — one of the top earners at the port of Killybegs.

Emer Marie has an overall length

85 ft 9 in; beam of 24 ft 7 in; and draft of 13 ft. She is of carvel construction and has steel engine seatings and

masts and an aluminium whaleback.

Propulsion is by a Caterpillar D.398 TA/B diesel engine of 850 hp at 1,225 rpm, turning a Fennholt controllable-pitch propeller through 3.9:1 reduction-gear. Extra thrust is provided by a fixed nozzle.

A Gardner 6LXB diesel (127 bhp at 1,500 rpm) drives the auxiliaries, and there is a Lister ST3MA air-cooled diesel for emergencies.

The trawler's deck machinery consists of Bopp split winches (starboard type 3500 4BS Hydra NG and port type 3500 2BS); Bopp net

drum type ECH 2000; Bopp heaving winch type 3000 1B and Bopp unloading capstan type TAC 29 1000. There is also a Lossie PB5 power block with 38 in head and three-ton pull.

The main hydraulic powerpack is type GURY PL48. Wheelhouse equipment includes Decca Navigator Mk 21 with 350T Plotter; Decca desk binnacle and Decca 450M autopilot. Atlas supplied a multi-element transducer type SW 6019; Fishfinder type 720SP and 4101 radar with 9 in CRT.

The vessel is equipped with an Atlas Netzonde 470k, with 470 recorder which incorporates black/grey amplifiers for grey line presentation. She carried 750 fathoms of netzonde cable (two-ton breaking strain) and a multi-element headline transducer.

She has a Jolts Krash netronde winch of 1,800 metres capability complete with all hydraulic parts to work with the Atlas Netzonde.

Emer Marie's 400 watt ssb radio telephone is Duncan's model RT102. Other fittings include Ben Superspeed Log, Amplidam talkback system and Dymar Viking vhf.

She's the biggest wooden trawler

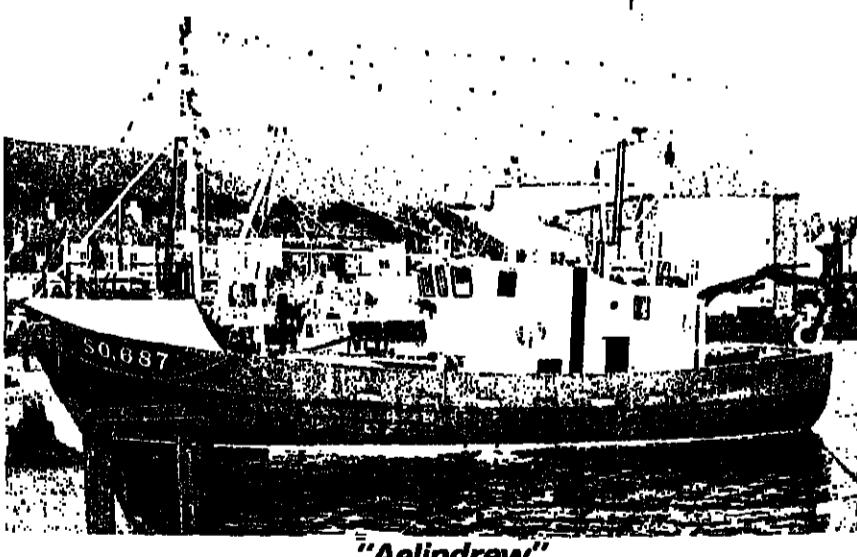
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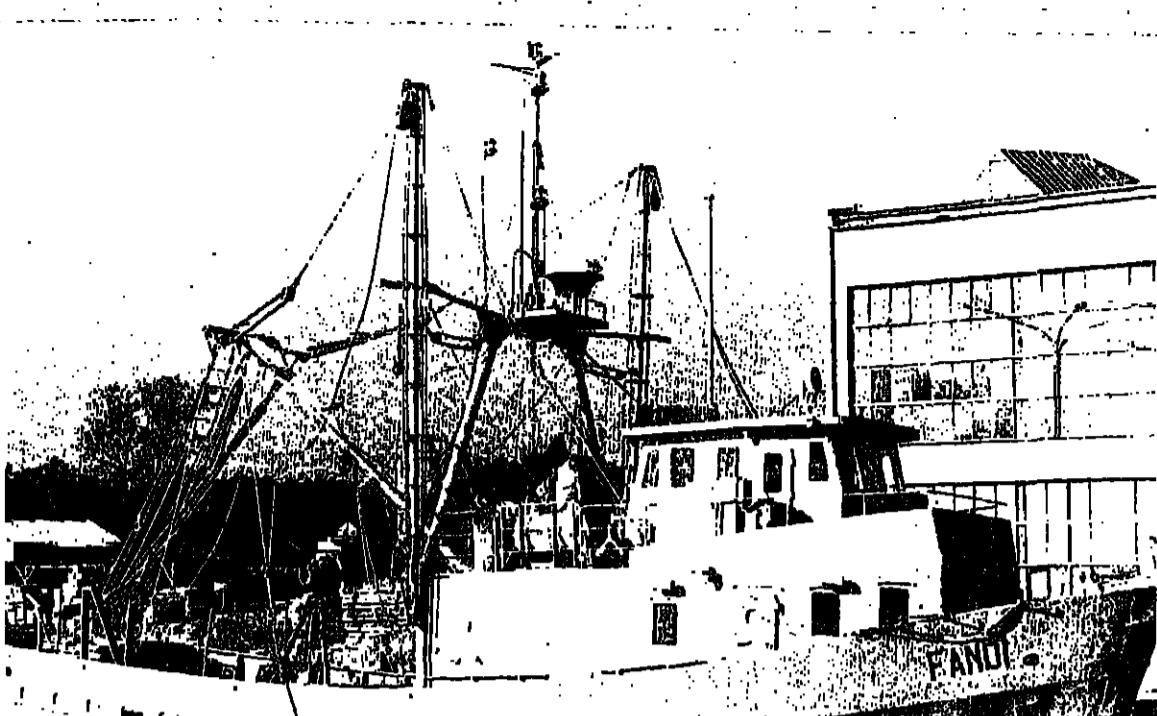
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POLAND DELIVERS FIRST OF AFRICA CUTTER SERIES

THE Wisla Shipyard in Poland has handed over the first in a new series of 23.2 metre (76 ft) long shrimp trawlers designed to fish in the Gulf of Guinea.

Named the *Fandi*, the vessel provides accommodation up to African requirements for a crew of 12.

The skipper and engineer each have air conditioned single-berth cabins and there is a ventilated four-berth cabin below deck and a six-berth cabin in the deckhouse.

The deckhouse also accommodates the galley and messroom.

The new KR-24 cutter series, of which *Fandi* is the prototype, features an all-welded steel hull with high forecastle and relatively large freeboard.

Deckhouse, wheelhouse, living quarters and engineroom are forward and the hold, fuel bunkers and stores are located amidships and aft.

The vessel has an endurance of 21 days and her foam-insulated fish hold can be maintained at a temperature of -25 deg. C.

Designed in Poland and built to Polish Register of Shipping classification +MK II Ryb, *Fandi* is 7.35 m in beam, has a depth of 3.65 m, mean draught of 2.9 m and hold capacity of 85 cu m.

Propulsion is by a diesel engine of 425 hp at 1,250 rpm turning a fixed-pitch propeller for a speed of around nine knots.

The engineroom also houses an 80 hp auxiliary diesel with 18 kW generator and the cooling compressor. There are also two hydrophones with pumps, an electrical switch panel and the reefer plant controls.

Her plate freezer is housed in a separate deckhouse compartment and has a throughput of 4,000 kilos of shrimp a day frozen to a temperature of -25 deg. C.

The hold is insulated with 120 mm thick polyurethane foam and lined on its lower part with plywood and galvanised steel sheeting. Sides, bulkheads and deck are covered with galvanised plates only.

On deck, the main three-drum trawl winch can haul 4.5 tons at 40 m/min and the warps are trailed from twin 8.5 m booms.

The winch is mechanically driven by roller chains from the main engine which makes it easier to handle by a relatively unskilled crew.

Nets for this trawler series have been designed by the Polish Sea Fisheries Institute at Gdynia and made at the Institute's Technical-Experimental Department.

Radio and navigational aids include a 200 watt intermediate-wave radio telephone, a vhf radio telephone, radar, vertical echo sounder and an autopilot which works with a magnetic compass and hand-hydraulic steering gear.

As reported in the August issue of *FNI*, the KR-24 cutters have been developed specially for the African market, but it is hoped in Poland that they will also appeal to other countries seeking to exploit new 200-mile limits.

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ANOTHER FOR FAROE

CAMPBELTOWN
Shipyard in Scotland has completed the third of four steel stern trawlers on order for Faroese fishermen.

Named the *Vesturbigvin*, she is virtually identical to the trawler *Fram*, delivered by the yard to Torshavn in September.

These vessels — designed specially for fishing inside Faroe's 200-mile limits — have an extended fo'c'sle which provides a large sheltered working deck.

The fo'c'sle also incorporates the accommodation — skipper's cabin, three two-man crew cabins and galley/messroom. The fishroom is insulated and has a capacity of more than 150 cu m.

Vesturbigvin is powered by a Mirrlees Blackstone ESI.6 main engine of 685 hp at 750 rpm, and she has two Lister HRW6 auxiliaries.

She is fitted with gearbox, sterngear and controllable-pitch propeller by Ljaaen and a Kort nozzle.

Deck gear includes Rapp

bridle winches, trawl winches, gillson winches and anchor windlass.

In the wheelhouse there is a Furuno radar, Simrad echo sounders, fish loop and Loran C, and Sailor radio telephone and vhf sets.

The *Vesturbigvin*'s principal dimensions are length oa 26.9 metres; length bp 23.1 m; moulded breadth 7.2 m and moulded depth 3.75 m.

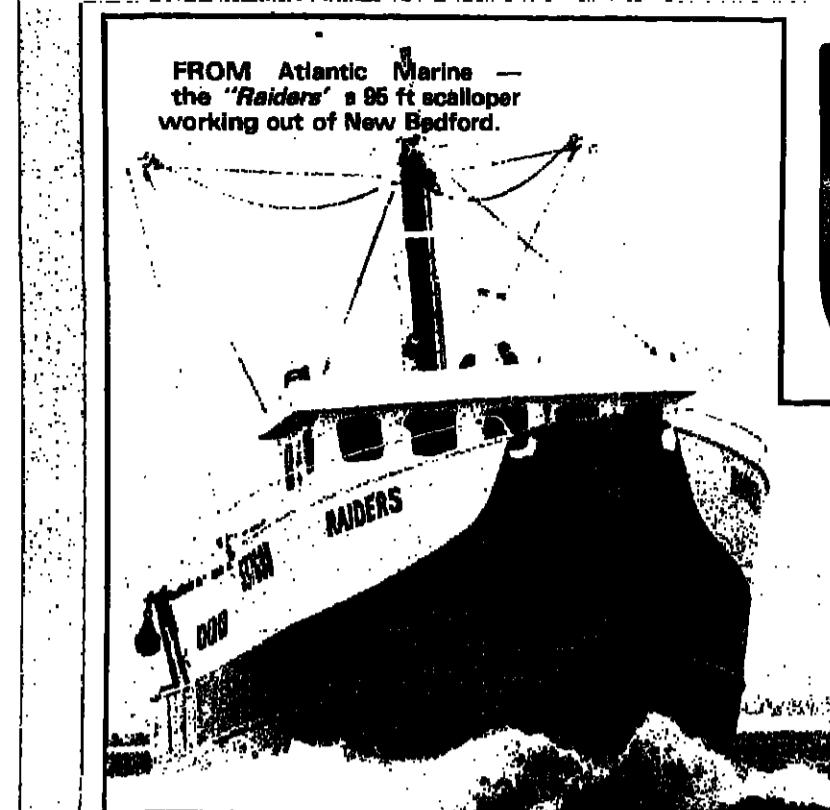
Italian yards relocated

TWO OLD established boatbuilders in Viareggio, Italy, have moved to new premises. The two identical sites are located on a new dock basin at Viareggio.

The yards are Cantieri Navale Codicosa and Cantieri Navale Giorgetti. Both are family businesses and the move will relieve the congestion in the building basin at Viareggio.



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U.S. BOATS BOOM

THE United States fishing industry is expanding into the 200-mile limits claimed for it since March 1977; and on the east, west and south coasts busy boatyards are working all-out turning out new vessels to match the new opportunities.

This surge in boatbuilding is accompanied by an intense and still-growing interest in improved technology.

"I am learning that, in fishing, first class is the best way to travel," said one east coast skipper visiting Fish Expo in Boston in October. He and many other top fishermen are looking for the best in boats, and in the equipment they install for finding, catching and handling the fish.

Vessels are getting bigger and several newcomers indicate that there will be a number of ships 140 ft and larger.

But the real emphasis is on quality and performance. American fishermen appear to be seeking the type of craft they have thought about for years and could not afford.

Now the dreams are being realised. Design ideas long latent are moving from drawing board to building way and out to the grounds. And the yards are adjusting and developing to meet the challenge.

Compared with yards in most other major fishing countries, they have one great advantage. Under the Merchant Marine and Shipping Act of 1916 (known as the Jones Act), any boat larger than five tons can only participate in American coastal fisheries if it was built in the United States. And coastal fisheries now stretch right out to 200 miles!

But protection does not extend to the equipment in the vessel or the engines that power her. The boatbuilding boom offers huge new opportunities for manufacturers around the world.

Joining in

The most enterprising of them were among the 313 exhibitors at the 1978 US Fish Expo and some even found time from the press at their stands to join in the seminars that are a feature of this yearly exhibition.

In the first of the seminars, three men closely involved in US boatbuilding looked to the fishing vessel of the 1980s.

John Gilbert of Boston said he had been designing fishing craft for 16 years and implied that he had never before been so busy.

His recent work has included a 94 ft stern trawler which will start with a series of four. The most remarkable thing about this vessel is that it will be of single skin GRP and will be built to the high classification standards of the American Bureau of Shipping.

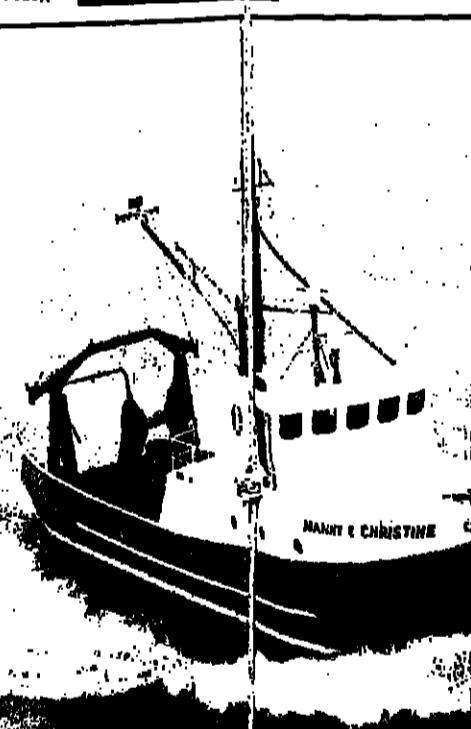
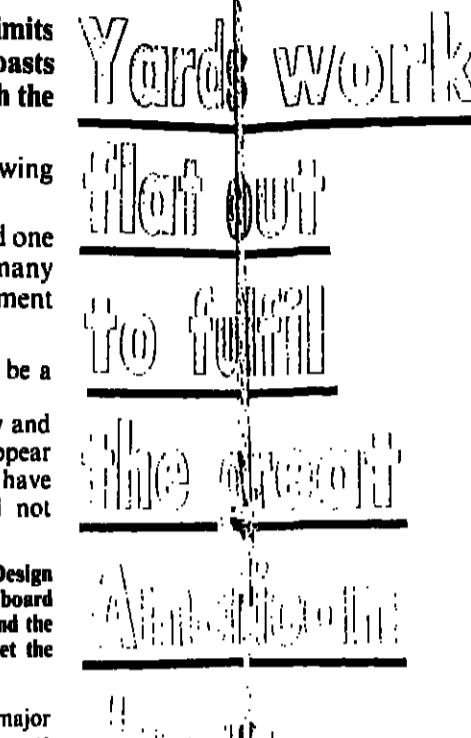
Whatever the combination, Scania diesels are powerful and reliable. And most important of all, they are built all through for marine use.

Scania means reliability in operation and economy. Scania also means an efficient service organization and accessibility to spare parts practically all over the world. With Scania around from the start, there is strength and security.

Speaking for the west coast, Seattle naval architect Benjamin F. Jensen saw the trend mainly in trawlers that could be adapted for other methods when required.

Combination vessels are coming in fast on all coasts. It seems that they will be more for seasonal changes by adjustments when in port than for switch fishing at sea.

The king crab ships, which occupy quality builders such as



FROM Bandon—the "Manny & Christine"—an 85 ft New England coast trawler. Her home port is New Bedford.

ANOTHER New Bedford boat. The 83 ft trawler "Manny & Christine" was delivered recently by Atlantic Marine.

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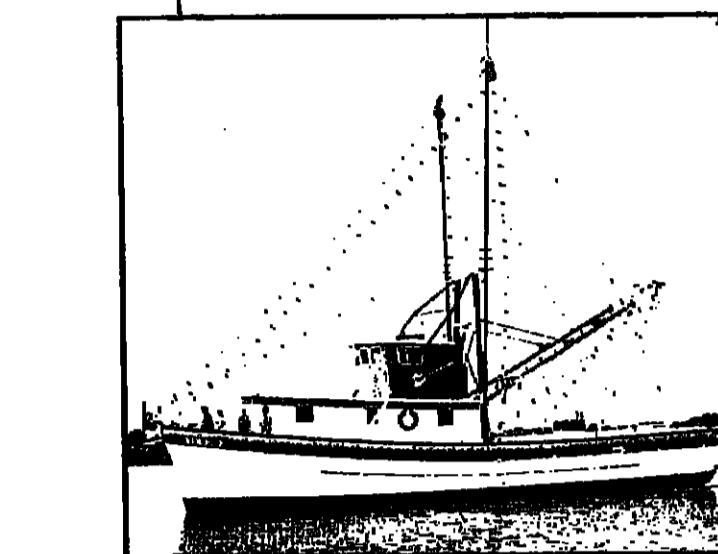
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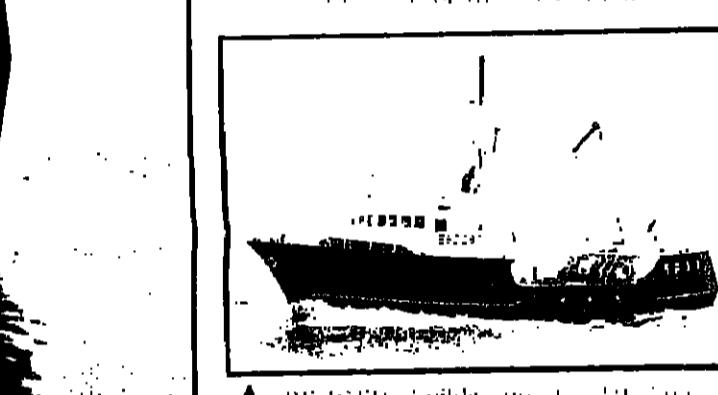
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▲ BUDGICK builds up to 100 ft long. One of them—the "Tuna"—is 100 ft long and has a 20 ft beam.



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Scania is around where the 80's are planned

Ships of all kinds need powerful and efficient engines that are economical and reliable in operation. Engines that will have to manage hard work, often with high continuous output. Engines, perfectly adapted to their duties to give maximum power.

Where others only deliver engines, Scania also delivers long experience and know-how. To Scania it is more important to offer the proper solution than just to get an order.

Scania is around when the ships of the 80's are taking shape on the drawing board. This ensures that a Scania diesel is always perfectly adapted to its duty.

Ships like liners, tankers, freighters, tug-boats, fish-

ing-boats or ferries all over the world have Scania diesels for power. Scania diesels are used in single and multi engine installations for propulsion, cranes, pumps, gensets and other kinds of equipment.

Whatever the combination, Scania diesels are powerful and reliable. And most important of all, they are built all through for marine use.

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ATLANTIC Marine in Jacksonville, Florida, has the reputation of being one of America's quality fishing boat builders. Like other yards in the southern states, Atlantic Marine began by supplying the local industry. But it has looked further than most and its vessels now fish in several countries.

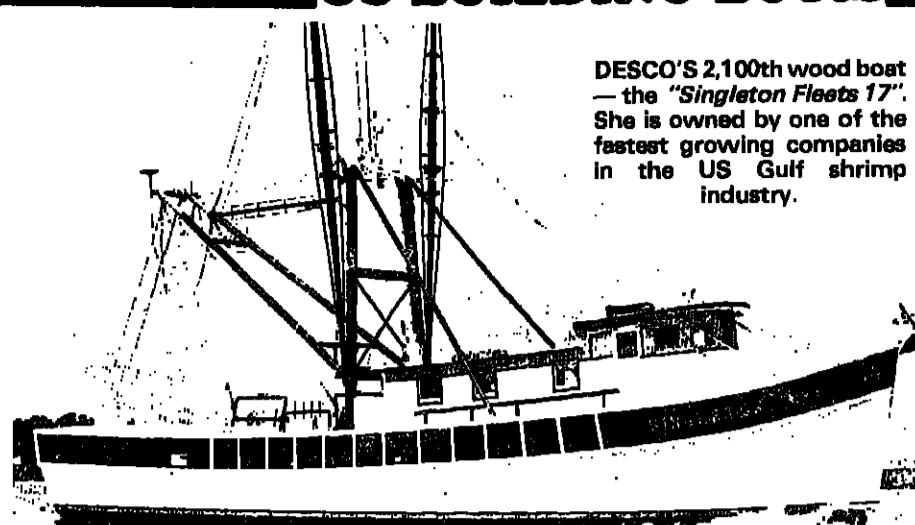
The yard builds five standard fishing boat hulls and it also recently completed a 170 ft long oceanographic research ship.

Among the types it offers are a 109 ft combination king crabber and trawler and an 83 ft boat for hake fishing off California.

Atlantic Marine has and that, as the pressure grows on the traditional west coast builders of king crab and other North Pacific vessels, fishermen are looking east and south. And yards there are developing designs to meet the new requirements.

One recent delivery is the 95 ft *Raiders*, a scallop fisher, working out of New Bedford and powered by Caterpillar D398 engine. Another, also based on New Bedford, is the 83 ft *Manny & Christine*, powered by a Caterpillar 3412.

US BUILDING BOOM



DESCO'S 2,100th wood boat — the "Singleton Fleets 17". She is owned by one of the fastest growing companies in the US Gulf shrimp industry.

ORDERS STILL FLOOD IN

REFLECTING the company's increasing business with fishermen working in waters far more turbulent than those of a US Gulf shrimp, Desco Marine has introduced a new "Whaleback" design for its standard 75 ft GRP boat.

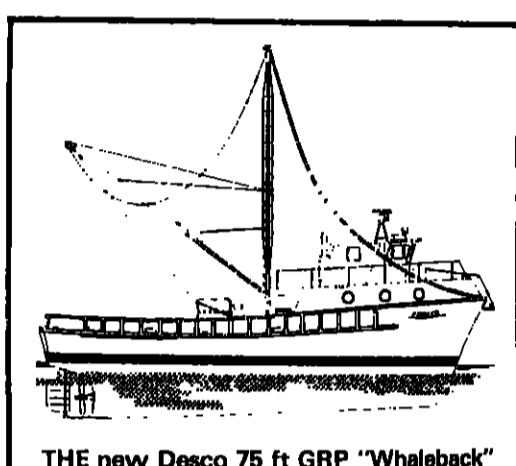
This has been developed specially for use in waters off Alaska, the New England coast and other areas where the Florida builder is finding a growing market.

Desco builds fishing boats at the rate of about 16 a month — eight 73 ft wood, four 86 ft wood and GRP, and four 75 ft GRP. But, even with this high output, the company is presently hard-pressed to meet the run of orders.

The huge shrimp industry is still the main Desco customer, particularly for the 73 ft wood boat.

In October, the yard delivered its 2,100th wood boat and appropriately this was one of a large series for a shrimp fleet. The *Singleton Fleets 17* was the seventeenth of 37 similar boats ordered from Desco by Singleton Fleets Inc.

Desco Marine clocks up its 2,100th wood completion and puts a whaleback on a standard 75



THE new Desco 75 ft GRP "Whaleback" boat developed for rougher fishing waters off Alaska and the New England coast.

Another Desco milestone in October was the launching of the company's 100th wood and GRP 68 ft boat. The *Banjo II* is the second 68 ft Desco boat for Jack Ritchey and Fred Gurr of Newport, Oregon. And she is the 11th GRP boat from the company for the west coast. Another seven will have been delivered by the end of 1978.

The two *Banjos* are rigged for pair trawling which Ritchey and Gurr are developing on the west coast.

Growing fast

Operating from Tampa and Key West in Florida and Freeport, Texas, Singleton is one of the fastest-growing companies in the Gulf-centred industry.

President Henry C. Singleton Jr has a goal of 50 boats in his fleet by the end of 1979.

Future plans, according to Mr. Singleton, include the purchase of Desco 73 ft boats in lots of five, with a minimum order in 1979 for 20 boats.

The *Singleton 17* is registered in Freeport. She is powered by a Caterpillar 3408 engine of 365 hp.

Power plant

The *Banjo II* is powered by a Cummins KT-1150-M engine developing 365 hp at 1800 rpm and turning a 100 ft propeller. A. H. Wehbe had visited New Zealand to study local requirements. They were completed within three months of the order being finalised.

Lust month three 75 ft GRP boats left Florida on their long voyage for Desco's latest outlet — New Zealand.

The boats are small stern trawlers, built in seven months after international marketing manager A. H. Wehbe had visited New Zealand to study local requirements. They were completed within three months of the order being finalised.

Multipescu of El Salvador took delivery of two 68 footers in October and two more in November and will use them to catch lungostinos. The company has an option on another eight boats during 1979.

A third company, Acoipto, takes delivery of a 68 ft combination stern dragger and shrimp trawler this month.

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PORTS & MARKETS

Project to help Co-ops

FISHING is a relatively small activity in the Central American state of Guatemala, accounting for only about three per cent of agricultural production. But there is growing interest in developing the potential of this industry, particularly as an export earner.

The government is to carry out a \$6.7 million project which will assist existing co-operatives at El Tamarindo, El Triunfo, La Libertad, Acajutla and La Union.

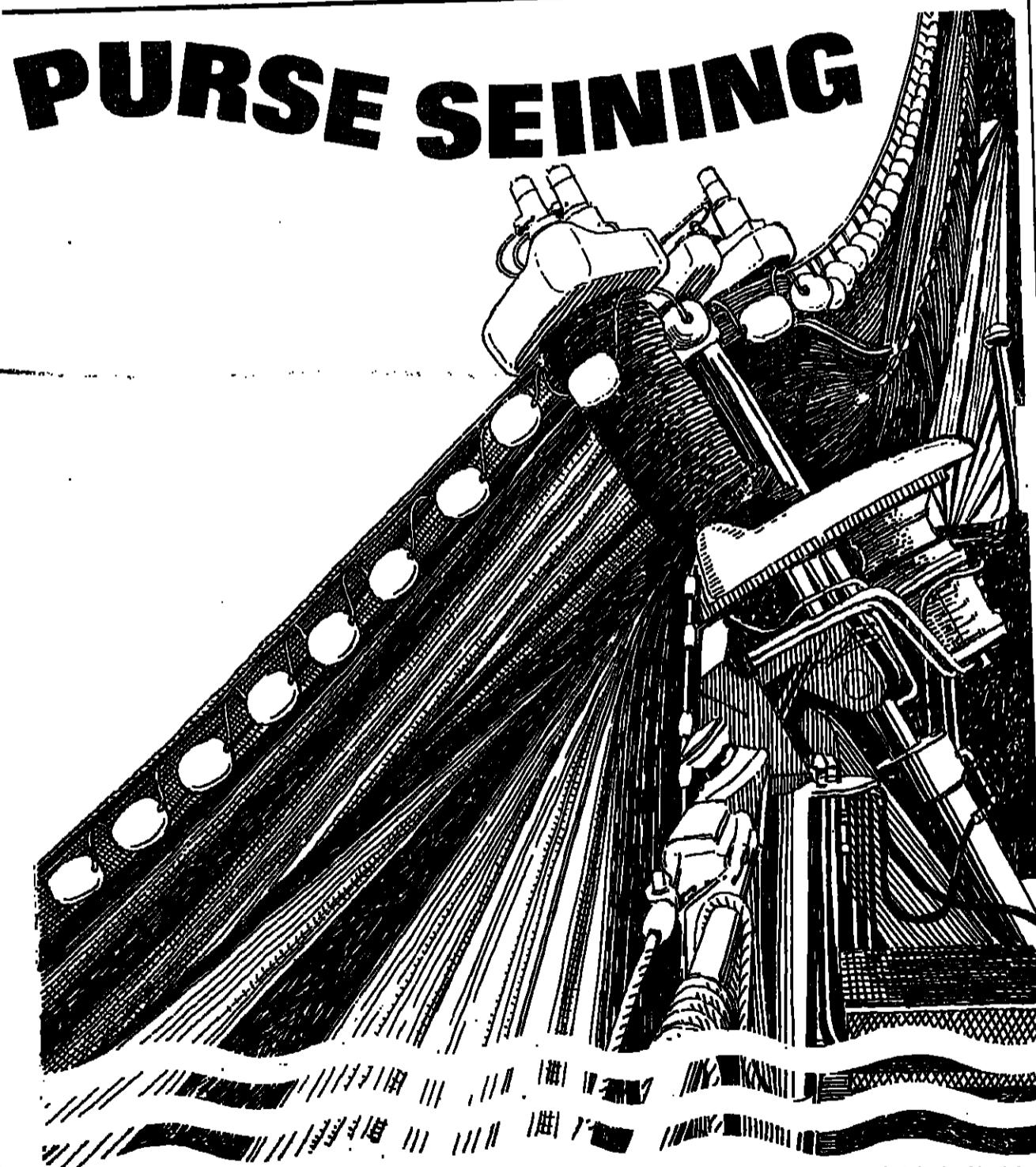
Large scale activities are to be developed at La Union where facilities for boat maintenance will be set up.

The Inter-American Development Bank is lending \$5.3 million towards the project, which will require cold stores, processing plants and landing wharves to help diversify the industry from its basic shrimp fishery.

Private enterprise is also taking part. Backed by a \$2 million loan, the company Multipesca SA is beginning a shrimp venture in 1979. Another company is planning an investment of \$6.5 and will be seeking all marketable types of fish.

CATCH SOARS IN URUGUAY

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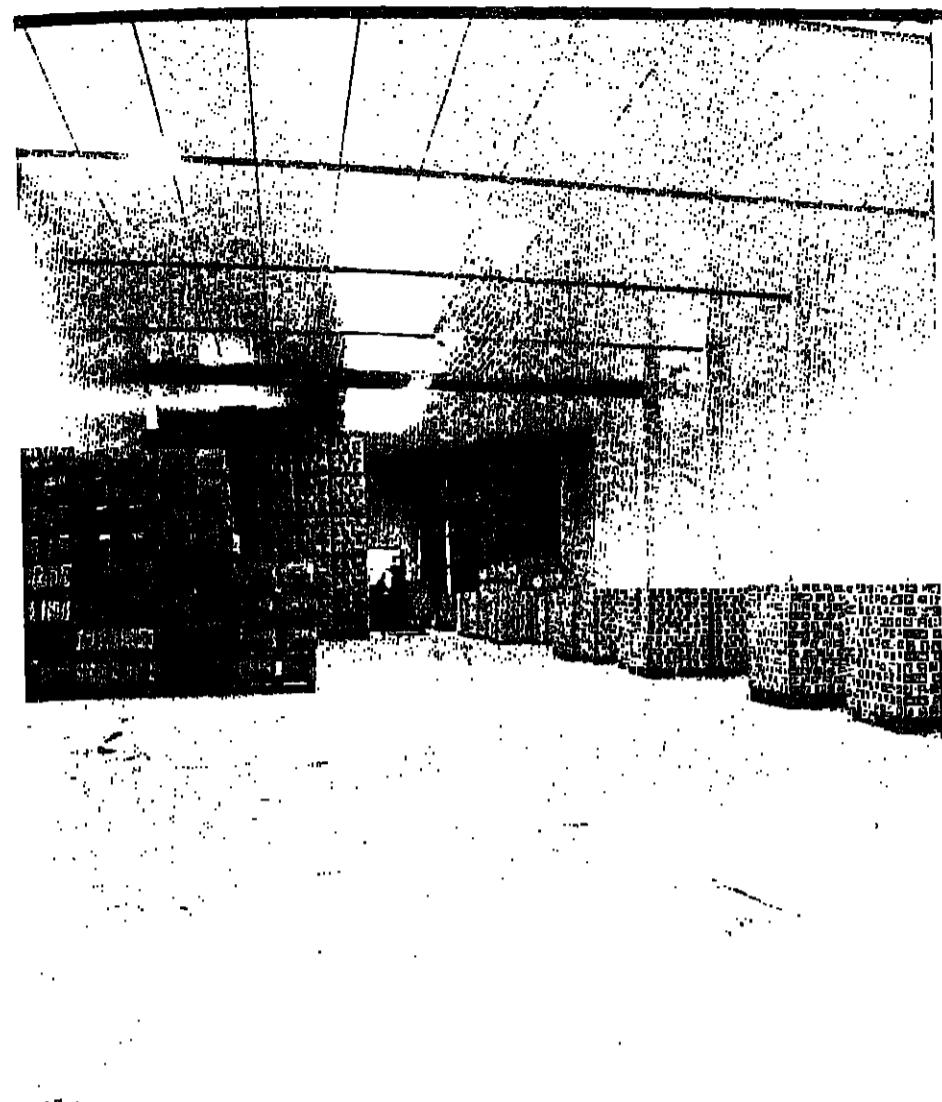
INDIA EXPORTS ON TARGET

EXPORTS of sea products from India in the first four months (April-July) of the current fiscal year were 32 per cent higher in quantity and 18 per cent in value over exports in the corresponding months in 1977.

Exports in 1978 were 25,361 tons valued at Rs62.7 million (\$38.5 million) against 19,234 tons valued at Rs58.4 million in 1977. The increase in this period was 6,127 tons and Rs104.3 m; but although total exports and earnings were higher their unit value was lower.

The export target is 73,780 tons and Rs142.7 million (\$125 million) against export earnings of Rs180.5 million in 1977-78 and Rs189.2 million in 1976-77.

The fish catch rose to 2,54 million tons in 1977-78 compared with 2.4 million in 1976-77. The rise of 5.8% was almost double that in 1976-77.



Cold stores doubled

ONE OF the facilities of the new Tempco Severside cold store complex at the Willand Industrial Estate in Devon is a blast freezer able to handle mackerel from south-west England ports.

The £1.25 million Willand II project was opened in October by John Clement, chairman of Unigate Foods Ltd. It is a "mirror image" of the Willand I project opened in 1975 and brings the available cold store space up to 2.5 million cu ft.

The original concept was dairy oriented, but Willand II also houses fish landed in West Country ports.

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CANNERY IN BEIRA

THE European Economic Community is planning to assist in financing a fish cannery in Beira, Mozambique.

The factory is planned to produce 2,000 tons of canned fish, 1,800 tons of meal, 450 tons of oil and 100 tons of fish by-products. Total cost is estimated at the equivalent of US\$3.7 million.

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Inside one of the bays at the new Phase II Store operated by Tempco Severside at Willand, Devon.

America seeks outlets after record harvest

UNITED STATES sea product value reached a record level in 1977 and National Marine Fisheries Service officials are reaching for greater shares of the world market for the fishing industry.

The value of fish and shellfish landed by US commercial fishermen was \$1,600 million. This represents an all-time high for producers.

The value of processed fishery products, edible and industrial, rose to \$3,900, an increase of 11 per cent over 1976.

TUNA TRADE

STARTING in 1979, the Maluku Perikani State Corporation in Indonesia will export tuna to Italy, the United States and Japan. Ir. Tambuna, director of the Corporation, said these countries had shown an interest in Maluku's fish because of its very good quality.

The Corporation operates a fleet of 20 vessels, which were acquired with World Bank aid and went into operation this year. They are expected to bring in a catch of about 5,200 tons of tuna a year.

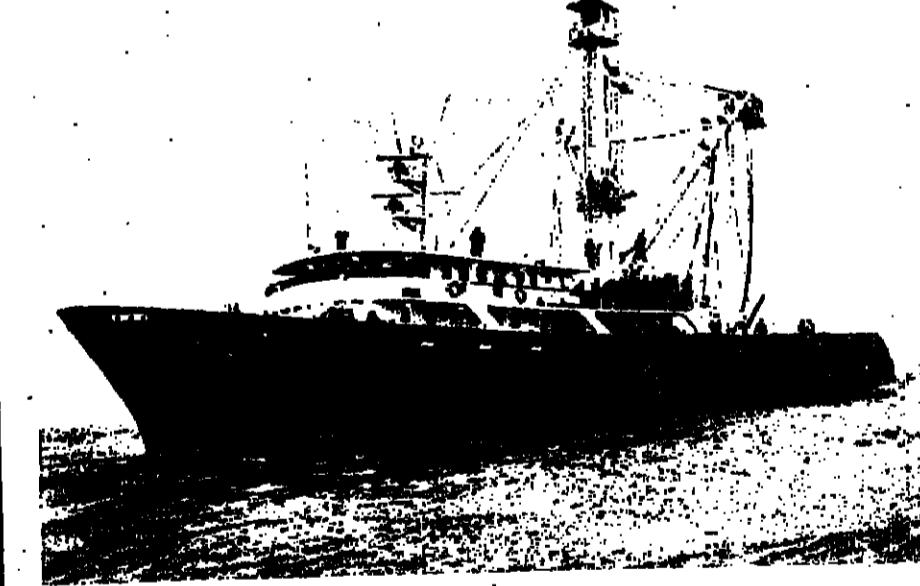
To meet the rising demand for tuna, the Corporation is building a special quay at the port of Matuku to accommodate foreign ships.

It will also have two carrier vessels built to collect fish from landing sites in the province and transport it to cold stores from where it will be shipped out to export markets.

Sri Lanka exports

SRI LANKA'S frozen fish exports are on the increase, and one of the best new outlets is West Germany. In the first four months of 1978, fish exports there earned some DM250,000.

With fish getting scarcer and more expensive in Europe, supplies are being sought further afield.



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PORTS & MARKETS

Double-decker goes national...

AFTER a successful test launching in Scotland, the Findus double decker (a new battered fish product), has now gone into national distribution throughout the United Kingdom.

The launch was backed by a £350,000 national television campaign running to the end of November, with a programme of advertising and promotions to follow.

The double decker consists of a layer of fish, topped with a layer of mashed potato and encased in batter.

It ranks with fish fingers as an economical and convenient meal and is particularly popular with children.

Before introducing this complicated product, Findus had to develop appropriate processing technology.

This took two years and the new production line is housed in the company's recently completed £1.5 million factory in Grimsby.

"Double deckers proved to be our most successful launch in Scotland ever," said Peter Tringham, Findus' new products manager, "and we see no reason why the product should not

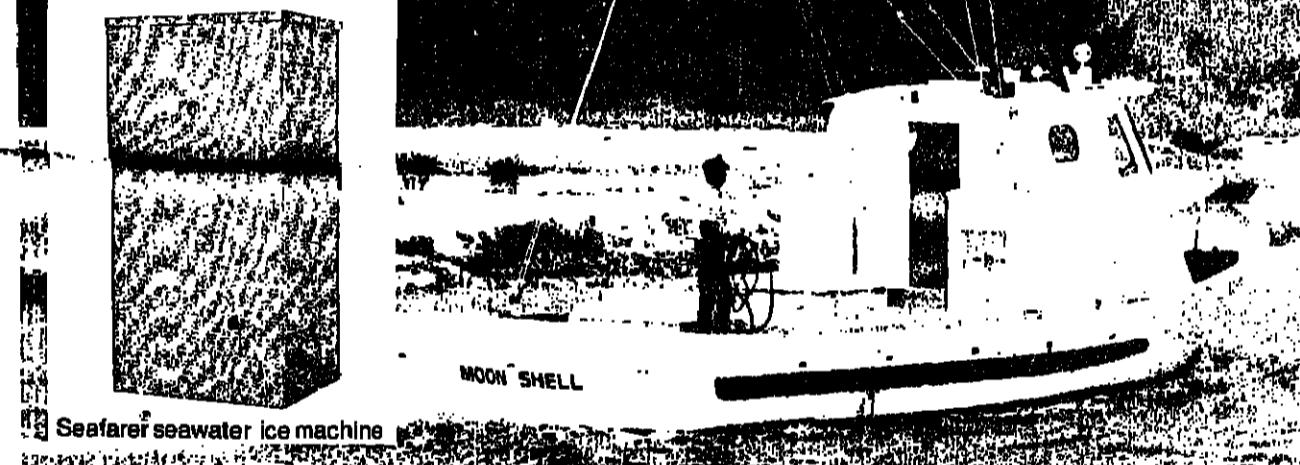
be just as well received by the rest of the country."

At another level, Findus also announced "good news for cats," with an improved version of its product Pet Pax. Marketed under the Kayak brand, this offers mince coley (saithe) in foil-in-bag form (instead of fillet blocks) in 200g and 400g sizes.

"We have for many years dominated the frozen sector of the £92 million cat foods market," says Findus.

With the new Pet Pax it expects to be better equipped to compete with canned and dried foods.

Fishing for increased profits?



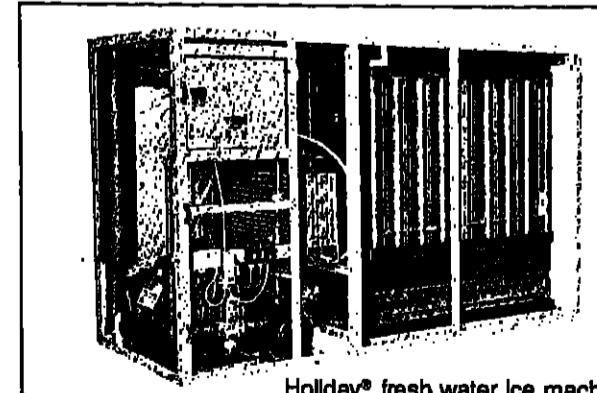
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JAPANESE BUY INTO THEIR SUPPLIERS

JAPAN IS SO eager to import fish products that her industry is investing in Canadian west coast processing plants in an attempt to corner the market. Some 17 processing plants now are partially foreign owned and these control about 10 per cent of British Columbia production. And foreign control is increasing.

Twelve of 60 processing plants and distributors in the province now are partially Japanese owned. Because Japan needs fish to feed its people, more Japanese nationals are investing in the Canadian industry.

Trevor Proverbs, a fisheries researcher, says in the past five years Japan has poured nearly \$20 million into British Columbia processing plants; and he estimates that loans to Canadian companies may amount to as much as \$40 million. The giant Japanese trading company, Marubeni Corporation, has led the way with debenture purchases of nearly \$12 million.

Mr. Proverbs says the situation is not yet critical, but it must be watched. And Gerry Spitz, manager of the Fisheries Association of BC, does not feel there is "a panic situation." He says British Columbia processors value the Japanese as customers and he would not like to see overreaction to their financial involvement in local companies.

Mr. Proverbs says that while Japanese financing does not give the investors legal control of the Canadian processing plants, the Canadian companies could become dependent on Japanese financing.

Much of the increased interest by Japanese firms in the BC market is the result of the lucrative herring roe fishery. In Japan, herring roe is a delicacy and Japanese buyers early in 1978 were outbidding each other so much that they pushed the prices up from about \$400 a ton to a high of \$1,100 a ton.

A negative result of Japanese investment is that some Canadian salmon now is being shipped frozen to Japan for processing, depriving Canadian shoreworkers of jobs.

Because of the inflated

Cash for Canada's west coast

prices the Japanese were willing to pay for roe, the export of BC marine food products to Japan has jumped from \$25 million in 1974 to more than \$130 million in 1978.

Another catalyst which has caused the unprecedented Japanese interest in the Canadian fishery is the 200-mile coastal boundary limit which has barred Japanese fleets from fishing off the west coast of Canada.

Mr. Proverbs says that while Japanese financing does not give the investors legal control of the Canadian processing plants, the Canadian companies could become dependent on Japanese financing.

It is feared that the Japanese, with their strong financial backing, could gain control of the fishery and Canadians, unable to compete, could lose control of the resource.

A negative result of Japanese investment is that some Canadian salmon now is being shipped frozen to Japan for processing, depriving Canadian shoreworkers of jobs.

Because of the inflated

Sri Lanka's project uses smaller fish

THE Fisheries Ministry of Sri Lanka is introducing a local substitute for imported Maldivian fish (dried and smoked) under a project funded by the Norwegian government.

This substitute has the nutrients found in wet fish and contains about 84 per cent protein. It will be known as Rasajewa. The government plans to set up three plants to produce it.

According to Fisheries Minister Festus Perera, the new product will open up more job opportunities, and it will utilise smaller fish such as the perchlet, pony fish and "herring" which are netted in abundance in Sri Lankan waters.

Another Norwegian-Sri Lanka project got under way in October when Mr. Perera opened a Cey-Nor model fish stall near the Fort Railway Station in Colombo.

Cey-Nor is a non-profit organisation set up with the assistance of a Norwegian youth association and the Norwegian government. As previously reported in FNI, it is engaged in building small boats and making gear. It also operates trawlers off the northern and eastern coasts outside the areas worked by local fishermen.

Besides offering fish at very reasonable prices, Cey-Nor will use the new stall to demonstrate hygienic handling of catches. Depending on the success of this initial venture, Cey-Nor hopes to open up sales outlets elsewhere in Colombo.

Cold chains

THE Philippines Ministry of Natural Resources is setting up five store chains in strategic parts of the country in an effort to cut down wastage of fish through lack of the means to preserve catches.

Records indicate that the country is losing about five percent of its yearly catch from waste caused by shortage of cold stores. This amounts to a loss of some 80,000 tons.

National Resources Minister Jose Leido Jr. said that the sites of the five cold stores had been cleared and levelled. Construction of the buildings was now in progress.

Another project by Mr. Leido's Ministry is the construction of an ice plant which will be cooled through power obtained from solar heat. About £230,000 is budgeted for the project which is intended to reduce the dependence of the fishing industry on imported fuel.

• DIRECTOR of the Bureau of Fisheries and Aquatic Resources in the Philippines has said that fish production in 1978 should amount to about 1,570,000 tons. This, he added, will be only about 10,000 tons below estimated effective demand for fish, which means the country is now close to self-sufficiency.

Demand for fish has been rising at the rate of about 5.5 per cent a year. But there is a continuous effort to keep the rise in domestic production ahead of this demand.

About 1.5 million Filipinos are estimated to be directly employed in the fishing industry, and even more earn a living from fish-related activities such as canning and drying.



Young helpers join in to remove small fish from a beach net in Sri Lanka

Prawn problem...

FINOTRO and Havosund Fishermen's Co-operative is buying 600 tons of frozen pink shrimp in Murmansk to keep business going until Norwegian prawn fishermen get started again in the 1979 season beginning in April.

The Norwegian shrimp trawler fleet has little on-board freezing capacity, which is the first requirement for continuous processing in the winter months. But previous experience with Russian frozen prawns has not always been the best, according to a spokesman for the Fisheries Directorate.

Birds Eye launch

BIRDS EYE FOODS, Britain's largest frozen fish producer, is putting its considerable weight behind the effort to promote the lesser-used species with a test marketing of hake and coley (saithe) steaks.

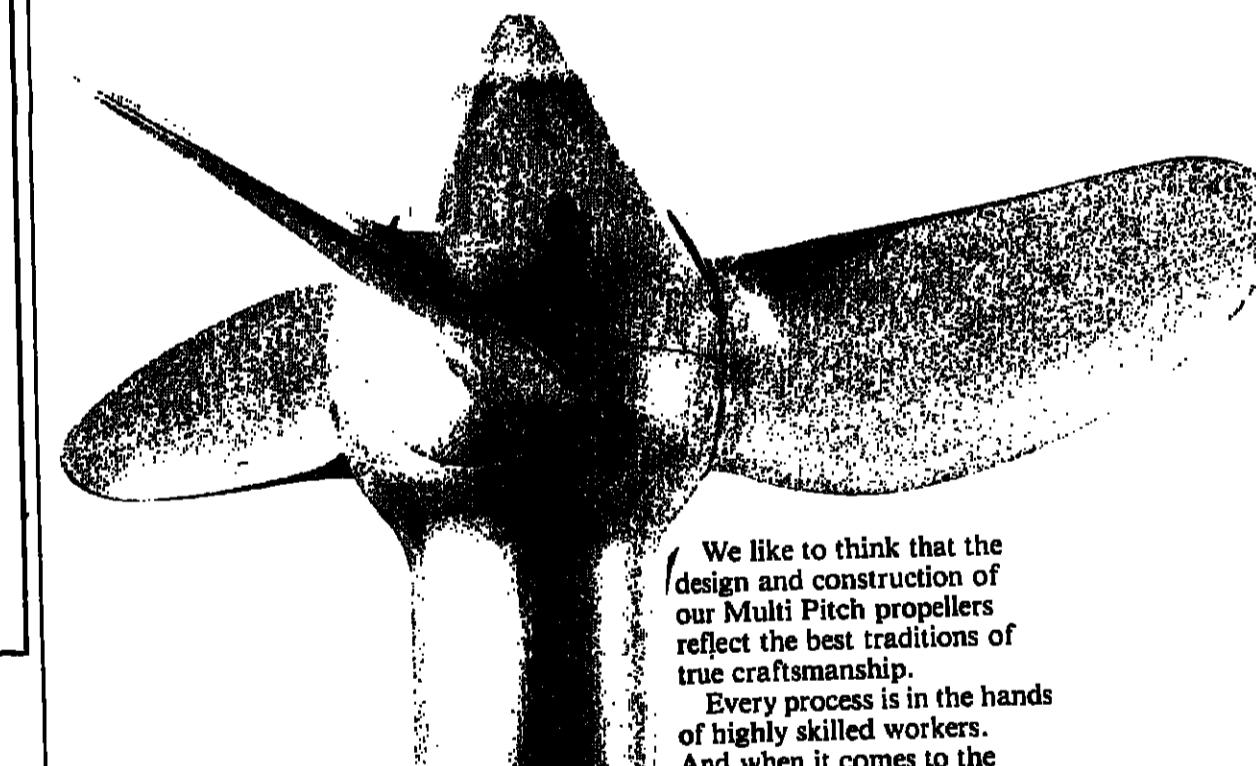
The test is being carried out in the north of England.

The new products, which are being launched in 7oz packs, have suggested selling prices of 46p for hake and 44p for coley.

The launch of hake and coley steaks follows on from the recent national launch of kippered mackerel.

"Although hake and coley are very similar in appearance to cod," says Birds Eye, "they appeal particularly to those consumers who like a slightly stronger taste than the traditional cod and haddock."

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CHEMICALS FROM KELP

GIANT KELP (*Macrocystis pyrifera*) is the largest and fastest-growing marine plant in the world. Under ideal conditions, it can grow more than two feet (0.656 metres) a day.

Californian kelp plants may measure up to 200 ft (61m) in length. A kelp bed will then have formed a thick canopy on the surface. Throughout the natural cycle of a kelp forest, mature strands will continually die and break away from the plant, giving way to new fronds shooting up from the holdfast. Under normal conditions, a kelp forest completely regenerates itself in this manner about twice a year.

But man now assists the regeneration process. In particular, marine "mowing machines" armed and operated by the Kelco Corporation of San Diego regularly visit the kelp beds. This process, if anything, improves regeneration by

efficiently removing the mature strands.

The interest of the Kelco Corporation in kelp is the algin that it contains in uniquely large quantities. Algin, a colloidal substance, has the property of absorbing large quantities of water. When a tablespoonful of algin is dissolved in a quart, the water becomes as thick as honey and can hardly be poured.

Crystals

This property makes algin important to a number of industries. When a teaspoonful is added to a gallon of ice cream, it prevents the water from forming coarse ice crystals.

Algin also has unique suspending, stabilising, emulsifying, gel-producing, film-forming and colloidal properties which render it valuable in other processes. Because of its suspending properties, it is used in pharmaceuticals to suspend drugs and antibiotics.

Kelp's need for sunlight makes for slower growth as one travels north towards foggy San Francisco. The

most prolific kelp beds are found

stretching south from Monterey into Mexican water off Baja California. The Mexican kelp beds are harvested by a local operator using a Kelco-designed harvesting vessel whose "crop" is processed by Kelco.

Harvesters

Kelp harvesters are giant, sea-going lawnmowers. By regulation, the kelp is cut out only three to four feet below the surface to facilitate quick regeneration. The master of the barge-like harvester systematically moves back and forth over the designated harvesting area — the large cutting racks at the rear of the vessel deposit the kelp into the hold.

Regulatory powers exercised by the California Department of Fish and Game extend to the issue of licences to harvest the various beds to the various operators. Kelco is dominant but it has its rivals, notably the Stanier Corporation.

In 1962, the California Institute of Technology, aided by a Kelco grant, initiated the Kelp Habitat Improvement Project. This project, still in operation, helped identify the role of the sea urchin in the deterioration of the beds, and has developed techniques for establishing new beds and restoring those which have been depleted. In addition,

experiments are being conducted to find a type of kelp that can grow in warmer

Kelco itself has organised its own Kelp Habitat Improvement Department which works closely with the California Department of Fish and Game, the Scripps Institution of Oceanography and the California Institute of Technology

Salmon fishermen pay too little

LES RIMES reports on a problem in British Columbia

Someone is paying. Salmon boats alongside a processing plant in British Columbia.

'78 fish meal award...

THE 1978 research award of the Association of Fish Meal Manufacturers has been won by Dr. E. R. Orakov of the Rowett Research Institute, Aberdeen.

Given for outstanding work in animal nutrition, the award consists of an inscribed silver trophy and a cheque for £150.

In addition, a donation of £100 will be made for books for the Institute library.

The presentation was made at a luncheon in London.

This is the 21st award and the sixth occasion that it has gone to a research worker in the Rowett Institute. The topic was Recent Advances in Knowledge of the Protein Requirements of Ruminants.

The catch landed by the Negombo was worth about Rs500,000 (about £16,000).

Put your country first, says Minister

SRI LANKA'S Minister of Fisheries, Festus Perera, has appealed to people working in the country's fishing industry to try and be fair when they make pay demands.

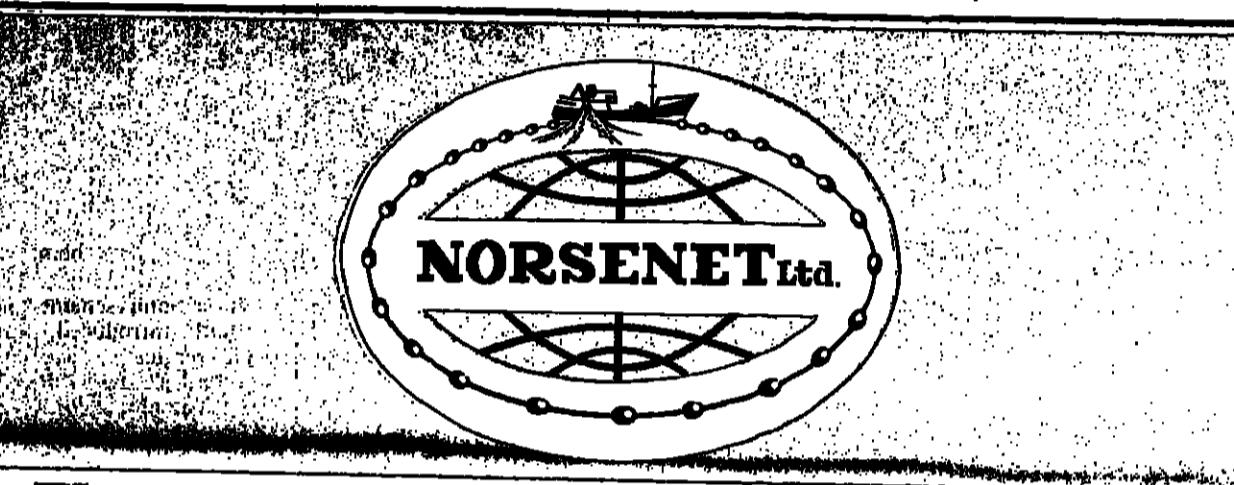
"No country can be developed," he said, "if workers place their self-interest above that of the country and make unconscionable demands that pay no regard to the welfare of the organisations in which they work."

He was talking to the crew of the Ceylon Fisheries Corporation trawler Negombo when the vessel called at Mutwal fishery harbour to land a catch of 95 tons.

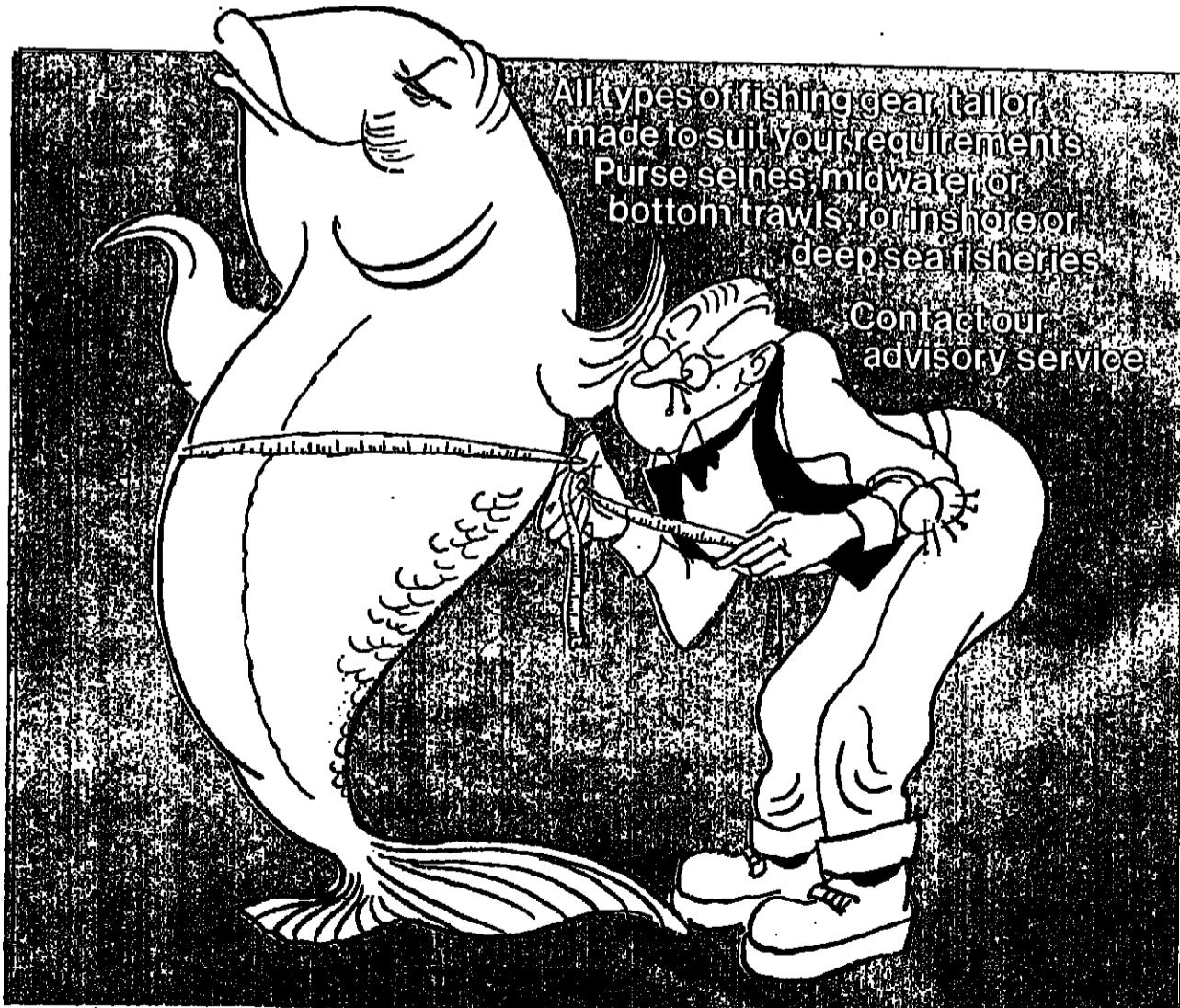
The Minister said it was an historic occasion for the Corporation for one of its vessels to bring such a large catch. The crew had spent 18 days at sea and a special bonus would be paid to them.

He added that, under a new incentive bonus scheme which he had introduced, some employees had received payments of Rs2,000 and Rs3,000 (about £65 and £100).

The catch landed by the Negombo was worth about Rs500,000 (about £16,000).



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Some herrings do not mix

NEW INFORMATION on the genetic structure of populations of Pacific herring has been revealed in a co-operative investigation between two divisions of the Northwest and Alaska Center of the US National Marine Fisheries Service.

Reporting on the work, the Center says the Pacific herring is a valuable commercial resource as well as a crucial link in the food chain between plankton populations and large carnivorous organisms. Understanding the genetic structure of herring populations is an important aspect of their management.

The work is being done by Dr. Fred Utter of the Center's Environmental Conservation Division, with the support of the Resource Ecology and Fisheries Management Division. The data were obtained by starch gel electrophoresis, with Stewart Grant as the principal investigator.

A previously unknown major group of Pacific herring populations in the Bering Sea has been identified by comparing two distinct populations from this area with a collection of herring from Puget Sound. An earlier genetic survey had indicated very little differentiation among populations ranging from off Oregon northward to Kodiak Island waters in Alaska.

Some interbreeding

This absence of genetic differentiation among stocks of the North Pacific Ocean and the Gulf of Alaska was presumed to be the result of some degree of interbreeding among different stocks of these regions.

"Before the examination of the Bering Sea collections," said the Center, "there was no reason to suspect that a similar degree of genetic interchange did not exist throughout the northern distribution of herring. The present findings, coupled with previous observations, indicate that a barrier to gene exchange of long duration (probably thousands of years) exists between populations of the Gulf of Alaska and the Bering Sea. Some degree of isolation among the two groups of herring was also indicated."

"These studies indicate that a thorough examination of the genetic structure of Pacific herring is warranted since two distinct populations from adjacent regions (the Gulf of Alaska and Bering Sea) have now been identified. Also, present technology justifies additional investigations of sub-populations within both regions, because the known number of genetic variations has more than doubled since this species was last surveyed six years ago."

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BANGLADESH

The co-op that's chosen its members

MOST DEVELOPING countries have tried to organise their working masses into co-operatives in the hope of speeding up development but, in the main, with little success.

The reasons for failure are many — the impoverished state of the workers, their low level of technical skill, their high level of illiteracy, their lack of leadership in their own ranks, the organisation of co-operatives by governments and their administration and management by civil servants without experience in business and industry. In addition, there is usually an inadequate supply of materials and equipment and the ever present insidious undermining influence of political interference and corruption.

Yet, despite these handicaps, some co-operative efforts succeed — perhaps about one in ten. One such fishermen's co-operative I came across in Bangladesh is supported by the Christian Commission for Development in

that country, financed by the World Council of Churches.

The manager of the project told me they had invested US\$1,761,722 in the organisation which is centred on the Mohashkhali district. Before the Commission attempted to set up the co-operative, they carried out a survey of more than 5,000 fishermen in

Mohashkhali and neighbouring fishing communities. On the basis of that survey, they selected 1,132 men for membership and formed them into ten co-operatives. The men were selected because the survey indicated they had the character, intelligence and will to work with others and also had a potential for leadership.

Taught

"We first taught them to read and write and to develop a social consciousness," the manager explained. "We encouraged their sense of community and personal responsibility. Then we went on to instruct them how to form a co-operative and trained them in the practical work of management, how to keep records and accounts, how to conduct meetings and handle the various kinds of problems that arise in any such society."

The men were also trained in modern fishing methods and to handle and operate mechanised boats. When they reached a required state of skill and competence, they were provided with boats and gear. So far about 100 boats of 42 ft overall equipped with 24 hp engines and modern fishing gear have been provided.

Staffed

"Members of a co-operative were able to buy the boats for 60,000 takas (about £2,000) through a repayment scheme," the manager said. "Of this, 45,000 takas are put into a revolving fund while 15,000 are set aside for administration costs."

CATCH TARGET

FISH PRODUCTION in Bangladesh is estimated to be around 600,000 tons a year, and it hoped to raise this to around three million tons.

Fisheries and Livestock Minister K. M. Obaidur Rahman said recently that the government was working out a five-year plan with this as its eventual aim. Present domestic demand for fish is about 1.2 million tons a year.

According to the Minister, all water areas in the country would be brought under the integrated management of his ministry.

Livelihood

Fisheries, including aquaculture, contribute about five per cent to the country's gross domestic product and provide a livelihood for eight per cent of the population.

In the current two-year plan (1978-1980), the target is to raise inland fish production about five per cent, from 622,000 to 653,000 tons and marine fish production from 95,000 to 155,000 tons.

To achieve the marine target, the number of trawlers will have to be increased from 18 in 1976/77 to 45 and mechanised boats from 300 to 350.

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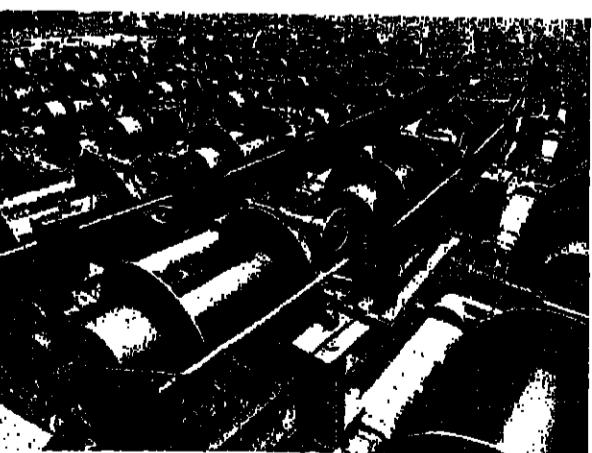
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BANK BACKS A GIANT PROJECT

ECUADOR

THE Inter-American Development Bank has approved a loan of US\$8.3 million to help finance a fishery development project in Ecuador.

Empresa Pesquera Nacional (EPNA), a state agency under the Ministry of Natural Resources, will use the loan for various projects. These will include development of sea fishing at various sites along the coast. There, docking and landing facilities will be constructed, and equipment will be provided for the handling of the fish brought ashore. Distribution channels will also be improved.

Participating in the financing of the project is the International Fund for Agricultural Development which will provide resources

totalling \$5.8 million, mainly for acquiring equipment.

Total cost of the project will be nearly \$18 million. It will include the following:

1. The formation of a fleet made up of some 20 boats around 40 ft (12.2 metres) long, five of 65 ft (19.8 m), and about 100 launches of 30 ft (9.15 m) equipped with gear for small-scale fishing.

2. Construction of docking facilities at the fishing sites of Puerto Bolívar, Puerto Lopez, Santa Rosa and Esmeraldas. Small sheds will be built to house ice-making and refrigeration plant at these places.

3. Processing buildings for frozen fish at Manta, Esmeraldas and Guayaquil.

4. Two markets, in Quito and Guayaquil, to store and distribute fish products.

The fishery sites will be equipped with ice-making machinery and refrigerated storage rooms. Processing facilities and two markets will also be equipped with freezing plant.

Also included in the project is the purchase of refrigerated trucks and vans, plus show cases and/or freezers.

The project will include programmes for training skippers, engineers and mechanics to operate the new vessels. It will also provide for a publicity campaign to help boost fish consumption, and a study for the promotion of co-operatives at fishing sites.

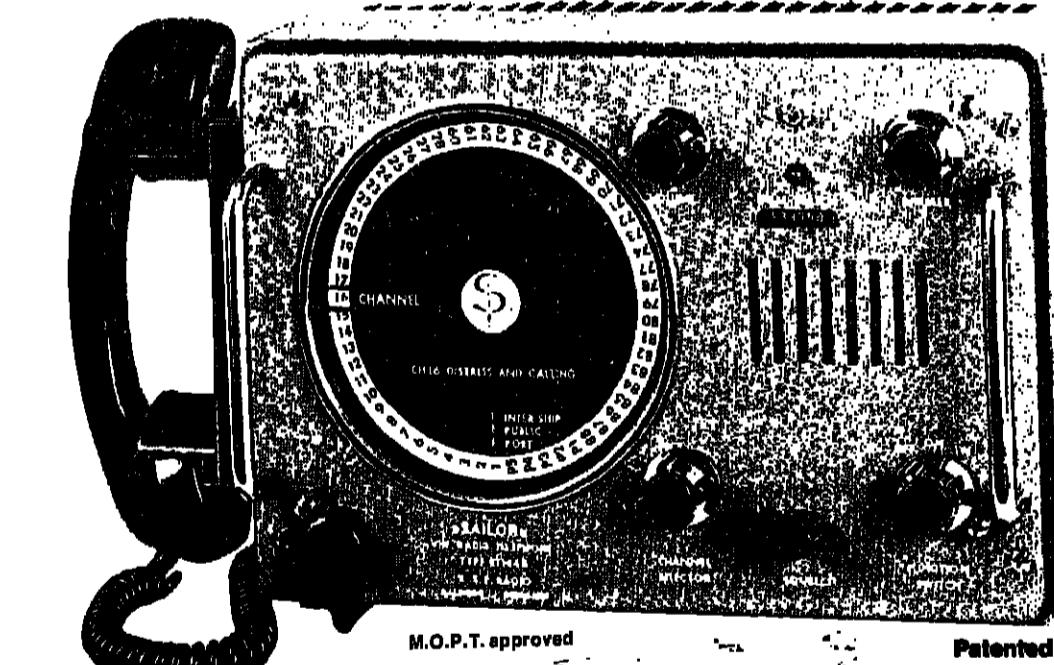
Under an advisory service programme linked to the project, international experts will co-operate with the executing agency in the operational phases.

"Execution of the project," says the Inter-American Development Bank, "will enable the fishery sector to increase its catch of under-exploited species of fish, increase the supply to the domestic market of high-quality fish products, improve the family income of artisan fishermen, regulate product supply and provide new employment opportunities."

The Bank loan will cover 46.6 per cent of the cost, the International Fund for Agricultural Development 32.6 per cent, and 20.8 per cent will come from local sources.

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With dual watch so that two channels automatically are watched.



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SAILOR RT 144 B is contained in a nylon-coated steel cabinet.

SAILOR RT 144 B is within the reach of everybody. The price being very competitive owing

to the fact that S.P. RADIO has developed a new simple programming system, which saves a lot of electronics — and also results in greater reliability.

The set is normally delivered programmed for all international channels, total 55, but it can without any other tools be programmed for further channels, or be programmed so that practically any special request can be compiled with (also land-based stations).

SAILOR setcall is available May 78 as a supplementary equipment for all SAILOR VHF radio-telephone sets, rendering possible:

Direct calls from coast station to ship.

Automatic listening to the coast station day and night.

Prompt connection between coast station and ship independent of traffic lists.

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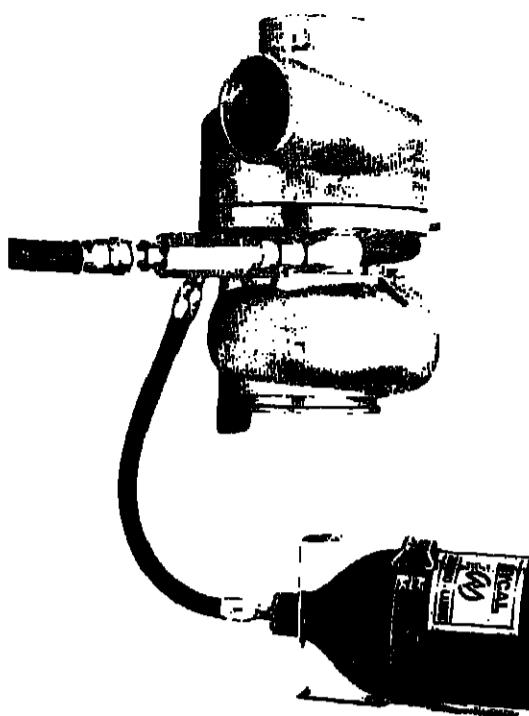
ASK FOR INFORMATION. WE HAVE A LARGE RANGE OF COMMUNICATION EQUIPMENT.

FIAT DIESELS

AIFO, the marine branch of the giant Fiat Motor Company, has introduced two new diesel engines and has reached agreement with Ford in the United States to sell certain of their diesels there. The agreement covers the 95-165 and 280 hp models.

The 280 hp is a development of the current 240 hp engine. The improved version is still under development and will have the type number 8361SM when it is introduced.

Now available in a marine version is a four cylinder 72 hp diesel which is used in Fiat cars. The lightweight high-speed engine is unusual in having an overhead camshaft. This is driven by a toothed belt from the crankshaft. • Further information from Aiffo s.p.a., 20123 Milan, Via Carducci 29, Italy.



A feed hose from the Nycal Turbo-Lube lubricant reservoir ties into the turbocharger's main oil supply hose through a check valve.

U.S. lubrication system for turbo chargers

A "UNIQUE" lubrication system claimed to give double protection to diesel engine turbochargers has been developed by The Nycal Company in the USA.

The Nycal "Turbo-Lube" becomes a com-

ponent of the engine's turbocharger, designed to prevent the most common and serious turbocharger problems.

An oil starved turbocharger can suffer bearing and seal failure in just a few seconds. This oil lug can also cause wheel rub and shaft damage.

The Nycal Turbo-Lube is a stand-by lubrication system consisting of a lubricant reservoir and a check valve tied into the turbocharger's main supply hose. It goes into operation automatically as engine oil pressure declines.

"Completely self-pressurising," says Nycal, "it provides immediate oil flow at hot engine shut down, thereby preventing bearings and seals

still rotating from running dry and suffering damage.

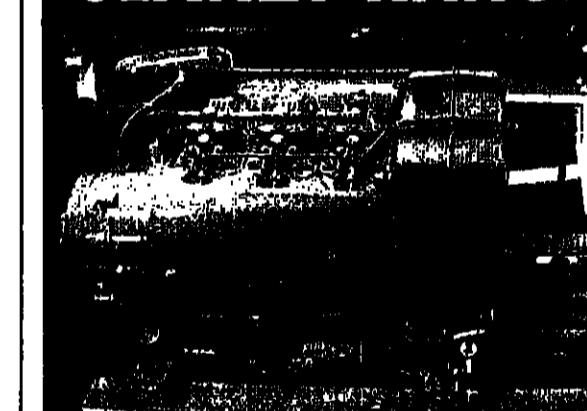
At cold engine start before engine pressure can be built up, the Nycal "Turbo-Lube" provides immediate lubrication from the oil retained in the main oil line.

"By automatically correcting the lubrication lag at hot shut down and at cold engine start, the Turbo-Lube prevents damage caused by oil starvation and the resulting premature turbo breakdown. This system in effect extends the life of the turbocharger."

The system can be installed in about 30 minutes.

• Detailed information and specifications from The Nycal Company, 240 South Main Street, South Hackensack, New Jersey, 07606, USA. Telex 134497.

THREE MORE IN SLANZI RANGE



A new diesel from the Slanzi range.

THE MAKERS of the Italian Slanzi engines have introduced three new air-cooled diesels to supplement a range which now extends from 7.5 to 48 hp. The new engines are one, two and three cylinder models which fill in gaps in the range.

They are built on a modular basis with a common cylinder capacity of 511 cc, producing engines of 8, 17 and 25 hp. These engines come fully equipped for installation into a boat with the minimum of connections. The fuel tank is integral with the engine and only the exhaust and propeller

shaft have to be connected up. The engines can be equipped with a reverse reduction gearbox with a clutch or with a reduction gear and clutch only. A variety of optional extras are available including electric hand starting or electric starting on all models. Stern gear to match the engines can be supplied.

• These specially developed marine engines are suitable for a wide variety of small work and fishing boats.

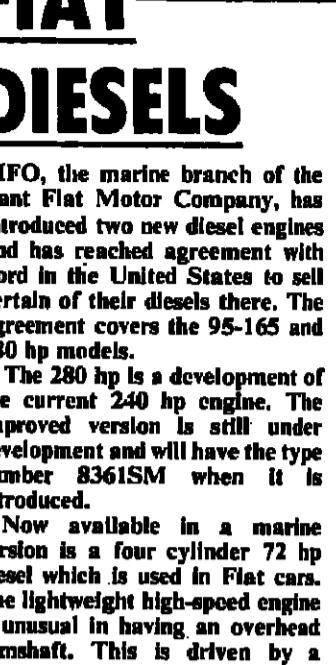
• Further information from S.p.a. Lazio, 42017 Novellara (RE), Italy.



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Twins synchroniser

A NEW engine synchroniser indicates when twin engines are not running at the same speed and also which is fast or slow. The compact unit is designed for installation close to the engine controls.

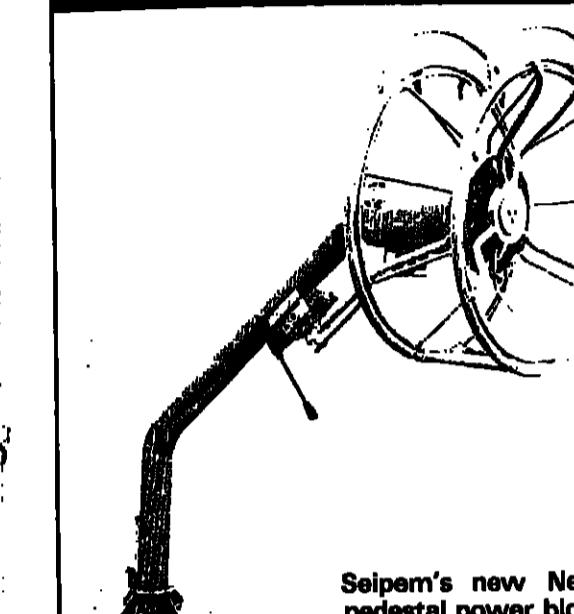
Three indicator lights are used. The centre one lights when the engines are synchronised, while the lights on either side show which engine is running fast. The unit works from a 12-volt supply and is good for 4, 6 or 8-cylinder engines. The indicators can be surface or panel mounted.

• Further information from Rockford Marine Enterprises, Rockford House, Rockford Way, Frinton-on-Sea, Essex, CO13 0A2, England.

product news

METHODS • GEAR • EQUIPMENT
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ITALIAN JOB



Seipem's new Nerso pedestal power block.

SEIPEM, an Italian firm which specialises in hydraulic fishing boat equipment, has added to its range of products. Its Nerso power block is now available in a pedestal mounted form with fixed block. This lightweight unit is designed for the small fishing boat and has a pull of 500 kilos.

Also new to the range is a line hauler, again pedestal mounted. This has a maximum pull of 100 kilos and a maximum speed of 90 metres per minute. Power comes from an engine-driven pump and both units are designed for simple installation.

Steering gear

Seipem also makes steering gear and has produced a power steering unit for vessels up to 50 metres long. The actuating mechanism consists of double hydraulic rams in a compact unit. The rams are made from stainless steel and the unit can be mounted outside if required. Power is supplied from an engine-driven pump.

• Further information from Seipem, Ing. Giorgio Brighi & C.s.r.l., Via Bartolomeo Parodi, 26-266, 16010 Ceranesi — Genova, Italy.

Nine new freezers

THE ITALIAN company Ercol Marelli has introduced a new range of refrigeration machinery for shipboard use. The range covers nine sizes from 50 to 300 hp. The units are all powered electrically.

Each is available for either 220 or 380 volts AC. On the larger units twin motors are used. The units are compact in design with the motor and its belt-driven compressor mounted above the condenser. Raw sea water taken from a separate supply is used in the condenser. Two types of evaporator are available. One is centrally positioned and a fan directs cold air to the required compartments via trunking, the other utilises a separate evaporator in each compartment with a fan to circulate the cold air.

• Further information from Ercol Marelli & C. s.p.a., Via Borgonuovo 24, 20121 Milan, Italy.

Aerospace method in new rudder control

DOWTY has developed a steer-by-wire hydraulic control system for marine applications.

Based on a development for the aerospace industry, the new control system derives its electrical command signals from an onboard computer or autopilot, or a manually controlled stick.

The equipment, supplied by Dowty Boulton Paul at Wolverhampton, England, consists of an hydraulic power pack driving the actuators, through electro-hydraulic control valves electrically signalled by servo amplifiers.

Pots last longer . . .

LOBSTER POTS, which were being heavily corroded by the sea, have been given a longer lease of life through a plastic coating marketed by the Manchester-based Mallatite Plastics Ltd.

Mr. Tony Batey, a partner in Southern Shellfish, at Poole, in southern England, coats the pots, which are left in the sea all year round, with a low density black polythene, so they now last up to five years — double their previous life.

The pots — 24, 27 or 30 inches in diameter — are made of 6 mm steel which is welded to form a frame, dipped in the polythene and covered in net. Bottom, middle and top bars of the frame are covered in rubber to protect the plastic and prevent chafing.

"Although Southern Shellfish offers pots with or without the coating, all fishermen ask for it and some fishermen, who make their own pots, bring them in especially for coating," says Mallatite.

COATING FOR GRP VESSELS

INTERNATIONAL PAINTS has developed a new coating designed to restore the finish to GRP hulls. One of the problems with earlier paints of this type was the rapid loss of the gloss finish. International has overcome this by the addition of a special solvent system.

The two-part polyurethane paint, called Perfection 709, will, says International, last for up to four years without any loss of gloss and for up to ten years without loss of its protective qualities.

At the same time International has introduced an abrasive cleaner which is used for the preparation of hulls before painting.

• Further information from International Paints Ltd., 24-30 Conute Road, Southampton, England.

Treeve's low price haulers

BOATBUILDER Treeve Marine of Cornwall, England, has entered the hydraulics field with a system designed for small inshore boats.

Director Robb Lello explains that existing systems are simply too expensive. "We have never been able to fit a hydraulic system for less than £1,000, while the boat itself may only cost £3,000."

Treeve has sought to fill the gap in the "small" end of the market with two low-price line and pot haulers.

The 600 lb TM System 1 hauler has a four or six inch cast iron capstan head driven by a Danfoss motor on a heavy-duty baseplate incorporating race and roller bearings to eliminate side load.

Its power unit is a Vickers Sperry-Rand vane pump coupled to a Kell friction clutch.

The system includes a seam-welded three-gallon reservoir tank and a four-way control valve giving forward, neutral, reverse and pressure relief.

System 2 comprises the same package but with a larger pump and motor.

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We make the network



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product news

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Signal pistol

A NEW multi-shot signal pistol allows the user to fire up to eight distress flares a minute.

A drum magazine stows flat when not in use, and contains eight self-launching flares which each burn for five seconds — visible, say the makers, for up to two miles in daylight and seven miles at night.

Ease of operation is claimed as a strong design feature. In case of injury or extreme cold, the pistol can be cocked by hand, foot or mouth, and fired one-handed.

The Dial-a-Star can also be used for signalling. Red, green, white and yellow flares can be loaded and fired in any sequence. The Dial-a-Star is being marketed worldwide by Flint and Brown Ltd. of Chobham, England.

Safety first

...WITH LOCAT'S RADIO BEACON

SURVIVAL radio transmitters employing advanced technology and designed by the Electronics Marine Group of Hull in co-operation with the British Ministry of Defence, Research and Development Establishments, are now available.

The new Locat beacon, despite its small size, sends out a signal in an emergency up to a range of 200 miles which can be picked up on the distress frequencies (121.5 and 243

MHz) by listening search and rescue services.

Developed over a period of three years, the Locat beacon sells initially at around £100 in the United Kingdom. The new pocket-sized unit weighing 330 gms has a shelf life of up to ten years, without any servicing requirement.

It is self-contained in a tough fluorescent plastic cas-

ing. Powered by a 13-volt high energy lithium battery, the Locat beacon incorporates a powerful transmitter. It is buoyant and will withstand being submerged deeper than 50 metres.

Temperatures

The Locat beacon will function in temperatures from -20 deg C to +60 deg C with a transmitting endurance of 36 hours at +20 deg C. Operation is simple needing only the removal of a pin by a ring pull to initiate the transmitter.

● Further information can be obtained from E.M. Electronics, Marine, Wm. Wright Dock, Hull HU3 4PG.



LOCAT
RADIO
DISTRESS BEACON
TYPE ED125
Approval: IACN No. 000
TO OPERATE: Pull ring to remove pin.
TO STOP: Replace pin.
STORAGE
Avoiding temperatures below -20°C.
BATTERY LIFE
10 YEARS
Locat
Developments Ltd
Wm. Wright Dock, Hull HU3 4PG

The new Locat survival radio beacon

STOP THOSE CUTS...

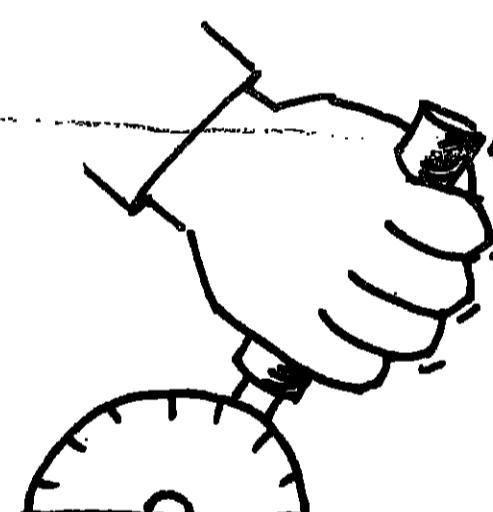


IFM INDUSTRIAL and Food Machinery Company is marketing a new safety glove for use in fish and other food plants. The glove is lightweight, knitted from fine stainless steel wire totally enclosed in a special plastic.

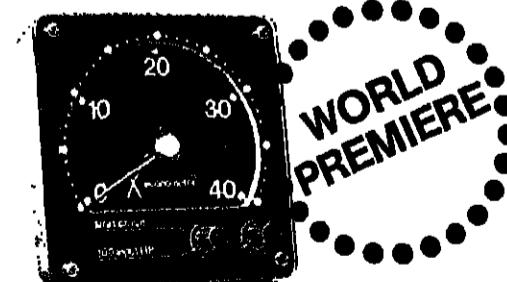
● Further information from IFM Industrial Food Machinery Co., Pen Mill Trading Estate, Yeovil, Somerset, England.

HOW TO SAVE \$ 20.000 WORTH OF FUEL ANNUALLY

* Results according to tests with typical 2.400 HP purse-seiner/trawler.



YOU'LL FIND THE ANSWERS HERE



The brand new ECONOMETER® continually indicates fuel consumption per nautical mile. So you can easily work out the optimal speed vs. the vessel's resistance curve; you can find the best trim, the most advantageous propeller pitch, and the optimal setting of the autopilot.

Additionally, the ECONOMETER® will indicate poor fuel combustion, hull growth or damage to propeller and hull. Finally you will be informed on hourly and total consumption as well as HP input (especially important for trawling and towing).

XAS G. HARTMANN
Marine Division
P.O. Box 1, Oslo 1, Norway. Ph. (02) 167310

The ECONOMETER® is reliable, inexpensive and easily installed; for vessels with diesel/gas oil engines, and logs providing 200 pulses per n.m.

Developed, manufactured and distributed by

Improved lifejacket inflates fast



THE Aqua-Safe 60 automatically inflatable lifejacket was shown by Aqua-Teknik on its stand at Nor-Fishing in Oslo this month. This approved lifejacket features double chambers, improved packing and faster actuating mechanism. It inflates in 5-10 seconds when submerged. Also shown was the new Zodiac "man overboard" boat and the Aqua life-saving suit.

THE LIFE JACKET YOU WEAR AT WORK

A PROTOTYPE "working life jacket", which a crewman can wear aboard the boat was demonstrated last month by the Irish Sea Fisheries Board (BIM).

The development of such a jacket has been exercising the minds of those concerned with safety at sea for years, says BIM. It has now sponsored investigation into the problem, setting himself. BIM's Chairman, Brendan O'Kelly, said that most in protective clothing normally worn by fishermen.

Speaking in Galway, having taken part in the demonstration himself, BIM's Chairman, Brendan O'Kelly, said the most tragedies in the fishing industry occurred when men had been knocked, swept or fallen overboard while working gear. In many cases they were unconscious when they hit the water and not able to help themselves. Not wearing a life jacket or flotation gear meant that there was not much hope of picking them up no matter how quickly a vessel was turned round and this applied from the small boatmen to those in large trawlers.

Avoiding tragedy

The problem, he said, was to find a working life jacket which fishermen would wear at all times.

It was necessary to design the garment with enough buoyancy to support the wearer in the water for a short period and also that minor damage to it did not render the buoyancy ineffective. BIM does not see the working life jacket as a substitute for the legally required life jacket. It is principally aimed at avoiding the "man-over-hoard" type tragedy.

The standard life jacket prescribed by law differs little in design since it was first produced in 1852. It is almost foolproof to put on, cheap and hard wearing, but it impossible to work in. It is required for the "disaster" situation.

Japanese interest

The new garment was developed by Tugmaster Safety Ltd. in co-operation with BIM. The Irish have backed the development with their own fishing fleets in mind and are now bringing it to the attention of other EEC countries.

Considerable interest has also been shown by the Japanese Fishermen's Federation, says Tugmaster. A representative came over recently to see the safety clothing.

A demonstration was given last month in Osaka and sample orders have already been placed.

Tugmaster says it is the only company producing safety clothing specifically designed for fishermen in a working environment. The fisherman's flotation smock sells in the UK for around £22 and the flotation bib and brace for £24.

● Further information can be obtained from Tugmaster Safety Ltd., Fair Close, Beccles, Suffolk NR34 9QT, England.

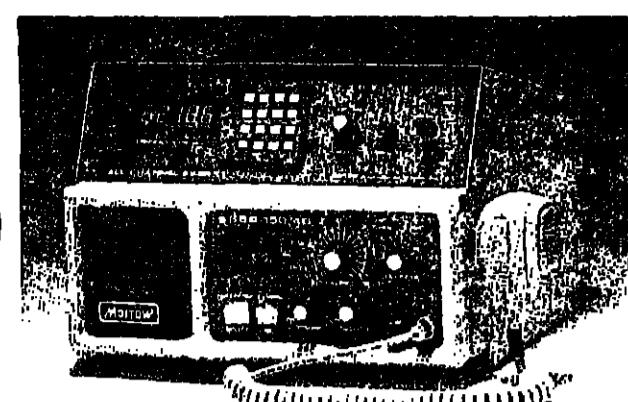
SUPPLIES FOR SMALL BOATS

G & M Power Plant Ltd is setting up a new marine accessories division to sell its smaller products, which will go under the name Marinac.

The new division, as well as taking over marketing of existing G & M marine accessories — such as Mase generators, Constavolt battery-chargers, Aquahent galley water heaters, Vire engines and the Alwood Crowell and Aqualite Major bilge pumps and water pressure systems — will also be responsible for a number of new products.

New products include: the Marinac Compass Binocular, Seacharger generator, Marine Check, radar, alarm, and Steerhause automatic pilots. The Marinac compass bi-

Morrow's new all-channel selector



Morrow's new all-channel selector with the SSSB-150/40 transceiver and (right) Stephen A. Roth, who has been appointed to develop Morrow products



Roth as its chief engineer and director of engineering.

He is a graduate of Oregon State University with a BSc in electronics. Before coming to Morrow, Roth worked for 13 years as an engineer for Techronix Inc.

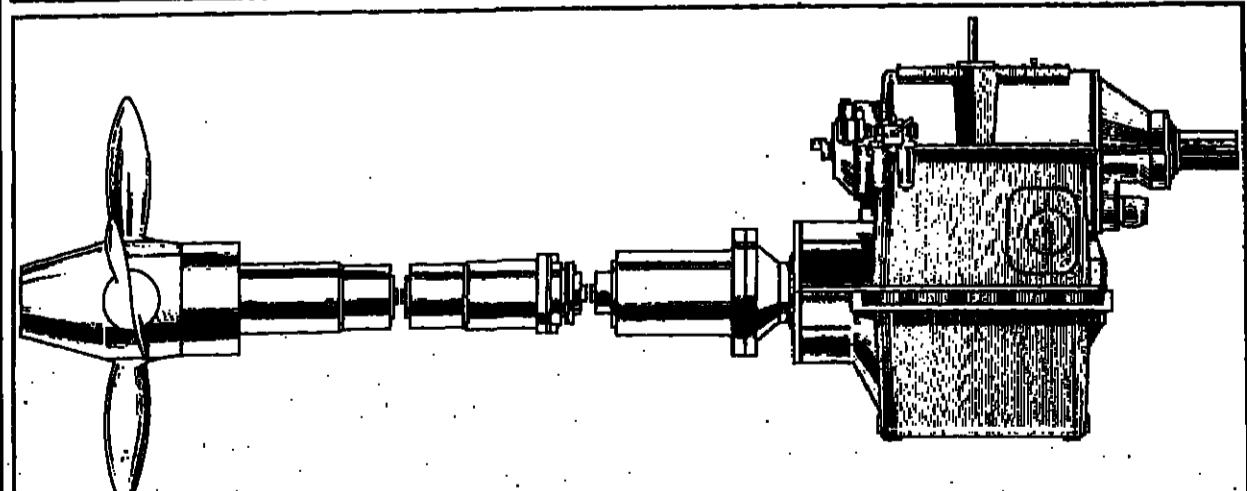
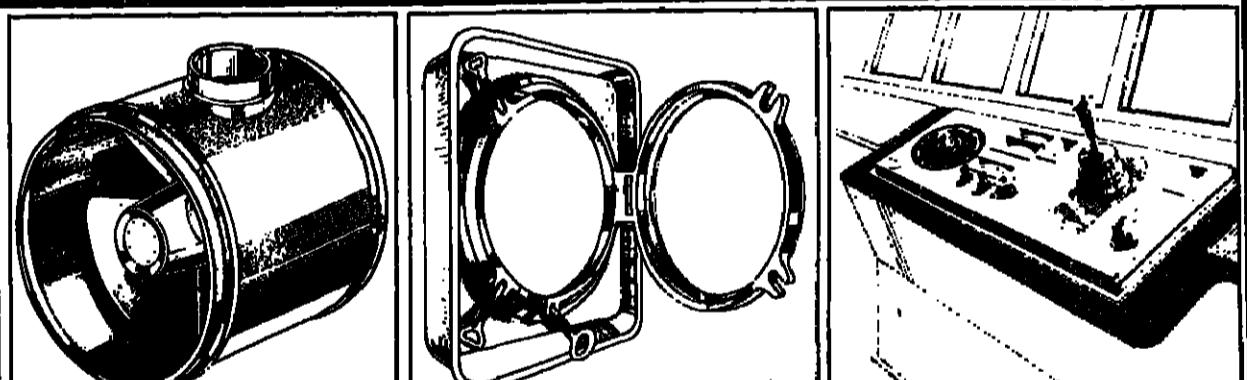
With Morrow, he will be responsible for the development of all the firm's marine products.

a total of 40 channels. The ACS-150's digital display shows channel frequency to the nearest 100 Hz.

Further information from Morrow Electronics, P.O. Box 7078, Salem, Oregon, USA.

● To help develop its range of marine equipment, Morrow has appointed Stephen A.

DETAILS THAT COUNT



TRANSVERSE THRUSTERS
Delivery of transverse thrusters covers a considerable part of the total sale. Production covers the area 75-1500 BHP. They are delivered for hydraulic, diesel or electric drive.

G.R.P. PRODUCTS

The ULSTEIN Group have their own plant for G.R.P. products for the marine industry, such as life belts containers, window frame sections, life hose and, lifebelt boxes, waterlight doors etc.

FCM JOYSTICK

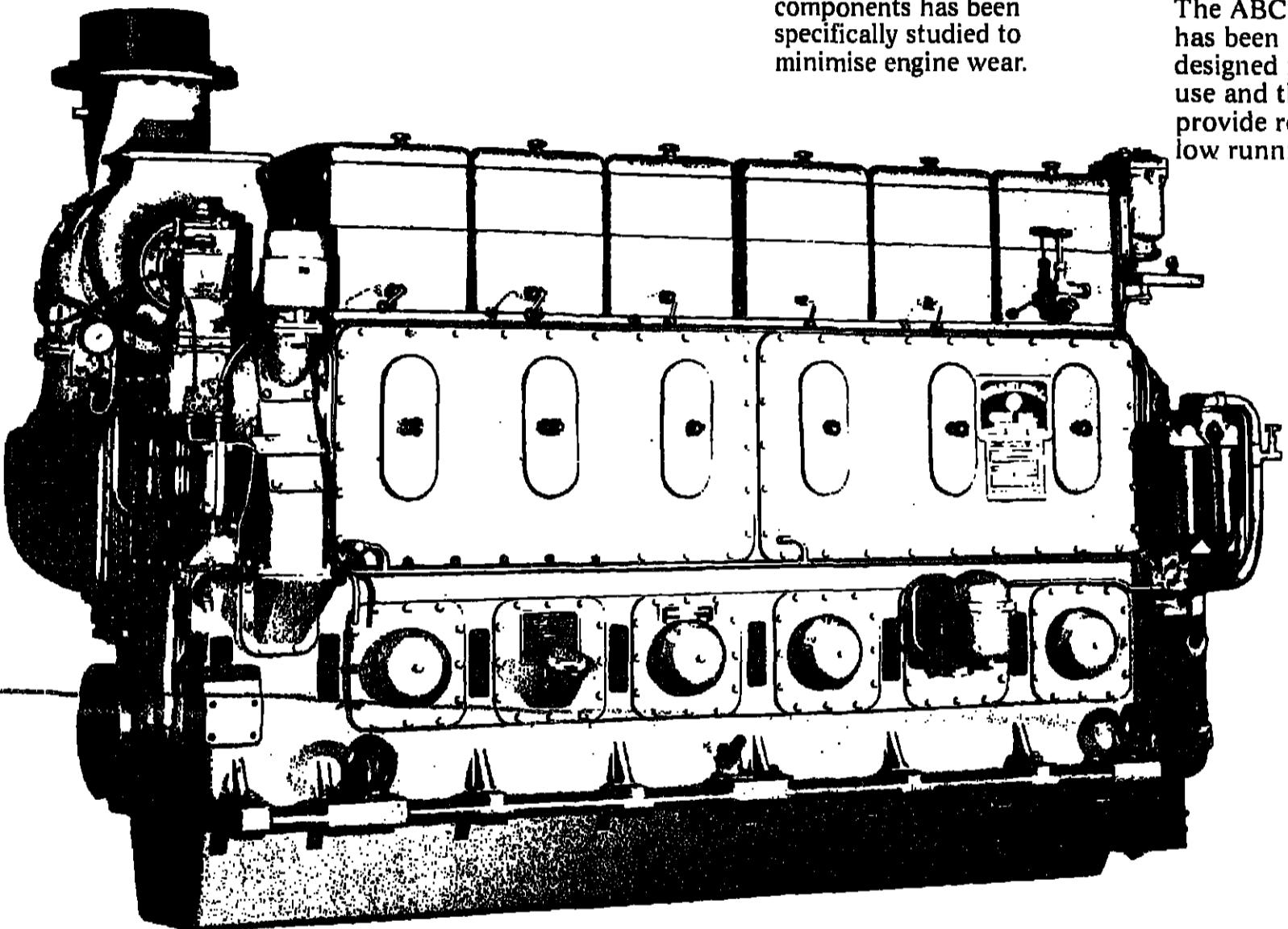
The FCM is an integrated manoeuvring control system, where all propeller units are connected. The course setting is made by a gyro repeater, and by using one universal lever (the joystick), the vessel can be moved in all directions, remaining at the same course.

ULSTEIN
TRADING LTD. A.S.
666, Niedstrasse, Kiel, D-2400, Tel. 22442

Ulstein (U.K.) Limited, Tuxbury, Dartford, Kent, DA1 5JL
Tel. (0833) 823188 Telex: 227383 Ulstein

There's more to them than meets the eye.

The 6MDX engine

**Very low lube oil consumption**

We claim to be the lowest of any engine within our range.

Good fuel consumption

Average 162 grammes per horsepower/hour with all accessories fitted.

Very low noise levels

The material mass correctly positioned absorbs a considerable amount of noise.

A dry sump

Ensures correct lubrication of all working parts which results in a longer interval between services and less engine wear.

ABC marine propulsion engines.

Some things about ABC engines you can see at a glance.

The superb design, for instance, for easy maintenance and servicing. And the precision engineering, which makes for ABC's unrivalled reliability.

But there's a lot more to them than meets the

Find out more about ABC engines. There's a lot more to them than meets the eye.

Quite simply the best value for money you can buy.

The ABC engine range consists of
DX 600—750 RPM. 185—1200 HP.
DX 600—1200 RPM. 185—1200 HP.

Very low engine wear characteristics
The design of moving components has been specifically studied to minimise engine wear.

Medium speed
Maximum power is obtained at 750 rpm. The ABC MDX engine has been specifically designed for marine use and therefore will provide reliability and low running costs.

Students from eight countries on WFA course

SAFETY FILM WINS AWARD

A NOVA SCOTIA produced film titled Safety Aboard has been awarded the prestigious Golden Image Award by the Long Island International Film Festival.

It was selected from among 60 such films from around the world for its overall excellence in the training film category. The film was made by Audio Visual of Halifax, N. S., for Fisheries and Oceans Canada and the Nova Scotia Department of Fisheries.

The 15-minute colour film deals with creating an awareness of personal safety for crew members of fishing trawlers and scallopers. Original research for the film indicated there were no existing training films available about safety on these vessels, but a great need for one. This project has proved correct: there are now 40 prints being used at various fisheries training centres.

The film is available for screening through the Information Division of Fisheries and Oceans Canada or the Nova Scotia Department of Fisheries in Halifax.

COMPLETE THIS FORM TO ENROL



To: The Training Manager,
White Fish Authority,
Industrial Development Unit,
St. Andrew's Dock,
Hull HU3 7SW,
England.
Telephone: 0482-27837.
Telex: 527261.

I would like to enrol for the next course in Fisheries Technology and Management, which begins on April 2nd, 1979.

Please send me more details about the Fisheries

TRAINING TOPICS

JAPANESE TEACH-IN

THE Japanese government is co-operating with Chile in a pilot project aimed at developing artisanal fishing in the South American country.

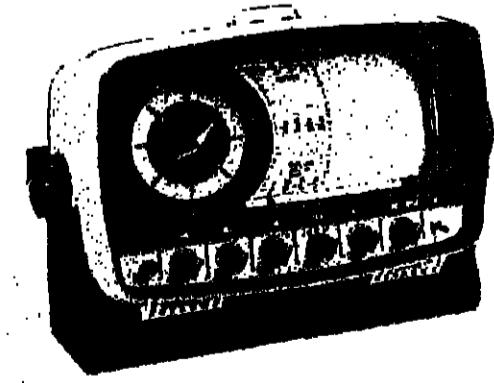
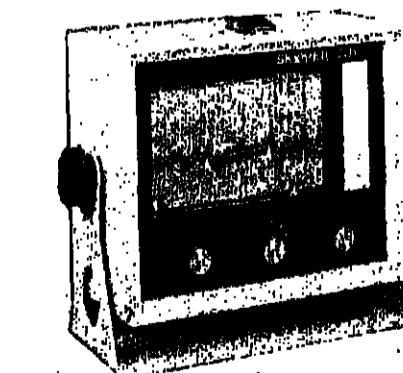
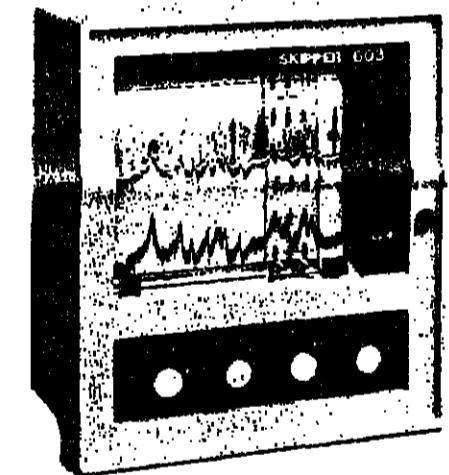
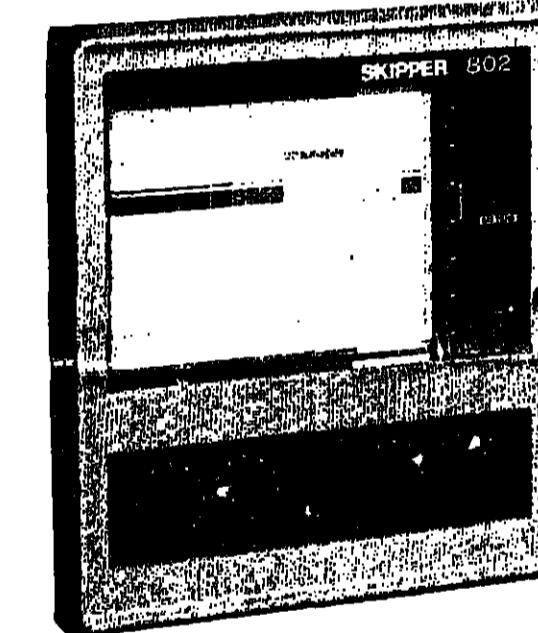
An agreement covering this assistance was announced recently by Chile's Under-Secretary for Fisheries, Jose Radic. Under it, Japan will donate a fisheries research vessel, will provide equipment to furnish several coastal fisheries schools, and will offer the technology necessary to activate a training centre pilot programme for small-scale fisheries.

The programme will begin in early 1979. It contemplates the selection of three centres from some 400 fishing villages along Chile's long coastline. Technical assistance will be made available for organising and managing fishermen's co-operatives, modernising artisanal fishing gear and improving on-board handling of catches.



SMALL-SCALE fishing in Chile — the Japanese are to help its development

Go for SKIPPER SIMRAD do!



SKIPPER Your NEW echosounders

SKIPPER 802

Professional performance — 16 inch CRT screen, 8 inch dry paper.

SKIPPER 803

A sure hit for active fishing. 8 inch dry paper.

SKIPPER 701

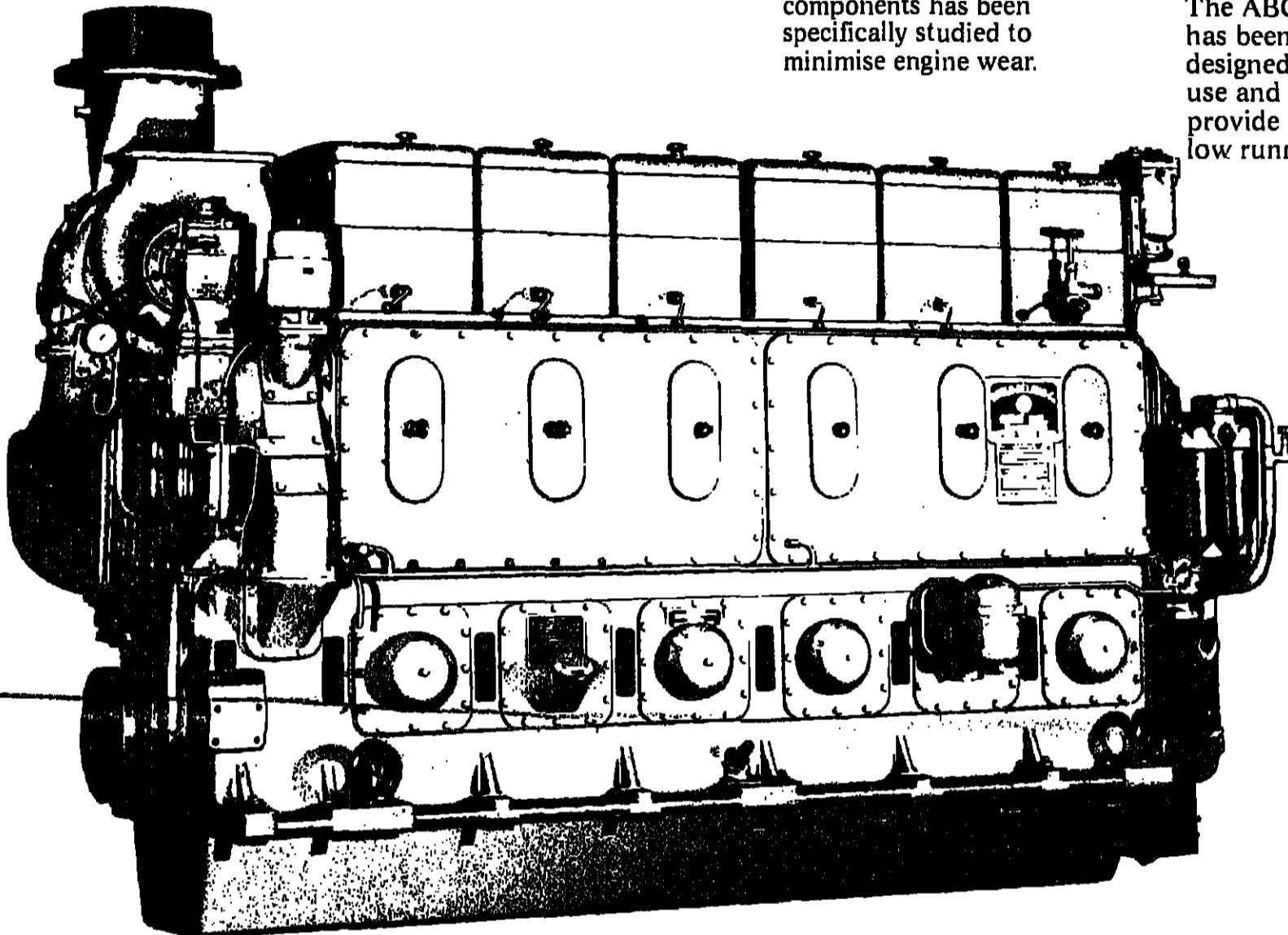
The elegant inshore echosounder.

SKIPPER 404

Inexpensive, with lots of useful services and fun.

There's more to them than meets the eye.

The 6MDX engine



Very low lube oil consumption

We claim to be the lowest of any engine within our range.

Good fuel consumption

Average 162 grammes per horsepower/hour with all accessories fitted.

Very low noise levels

The material mass correctly positioned absorbs a considerable amount of noise.

A dry sump

Ensures correct lubrication of all working parts which results in a longer interval between services and less engine wear.

ABC marine propulsion engines.

Some things about ABC engines you can see at a glance.

The superb design, for instance, for easy maintenance and servicing. And the precision engineering, which makes for ABC's unrivalled reliability.

But there's a lot more to them than meets the eye. Things like their incredible economy, remarkable quietness of operation, excellent torque characteristics—all this means superb value for money.

In addition there is a comprehensive after-sales service, with trained technicians available for routine servicing or in the unlikely event of a breakdown.

The ABC engine range consists of
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DZ 750—1000 RPM. 1050—1800 HP
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Anglo Belgian Diesel Co. (UK) Ltd
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Tel: (0926) 28469/25766 Telex: 311744 ABCUK G

Anglo Belgian Company
Wiedauwkaai 43, B-9000 GENT, Belgium
Tel: (091) 23 45 41. Telex: 11298



Students from eight countries on WFA course

SAFETY FILM WINS AWARD

STUDENTS from Chile, Ecuador, Hong Kong, India, New Zealand, Nigeria, Seychelles and Tanzania are attending a 12-week course in fisheries technology and management run by the British White Fish Authority. The courses are based at the WFA training centre in Hull, but students also travel to other parts of the UK to study specialised subjects such as boat building and fish farming.

The courses are designed to give the staff of government fisheries departments a general grounding in the many aspects of fisheries technology and management that together form a modern fishing industry.

They are intended mainly for graduates from developing countries who are in posts, or are intending to enter posts, in government fisheries administrations or development organisations.

The main areas of study are naval architecture (one week), fish preservation and handling (one week), fishing gear technology (two weeks), fisheries management (four weeks), fish farming (one week), vessel engineering, electrics, engines and hydraulics (one week), acoustic fish detection (one week) and marine science (one week).

The WFA's next course in fisheries technology and management starts in Hull on April 2, 1979. The fee is £950 excluding travel and accommodation. Accommodation can usually be arranged on behalf of students providing at least one month's notice is given.

COMPLETE THIS FORM TO ENROL



To: The Training Manager,
White Fish Authority,
Industrial Development Unit,
St. Andrew's Dock,
Hull, HU3 7SW,
England.
Telephone: (0182) 27837.
Telex: 527261

I would like to enrol for the next course in Fisheries Technology and Management, which begins on April 2nd, 1979.
 Please send me more details about the Fisheries Technology and Management course.
(Please tick appropriate box)

NAME.....
ADDRESS.....

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SKIPPER 802

Professional performance — reasonable price — 6 inch dry paper.
Basic ranges 30-120-300-600 m.
Digital scale, switchable meter, fathom, 750 Watt minimum power, 50 kHz.
Pulse length, paper speed, receiver and TVG — all continuously variable.
Operating voltage 10.5-48 V DC, 220 V AC.

SKIPPER 603

A elegant inshore echosounder.
6 inch dry paper.
Basic ranges 30-80-120-200 m.
Phased to 1100 m.
Digital bottom depth, 300 or 500 Watt minimum power, 50 kHz.
Pulse length, paper speed, receiver gain and TVG — all continuously variable.
Operating voltage 10.5-40 V DC.

SKIPPER 701

Inexpensive, with lots of useful service — and fun.
4 inch dry paper.
Basic ranges 10-20-40 meter.
Phased to 180 meter.
100 Watt power, 200 kHz.
Continuously variable paper speed, gain, TVG, pulse length.
Operating voltage 11-40 V DC.
Fathom depth available.

SKIPPER

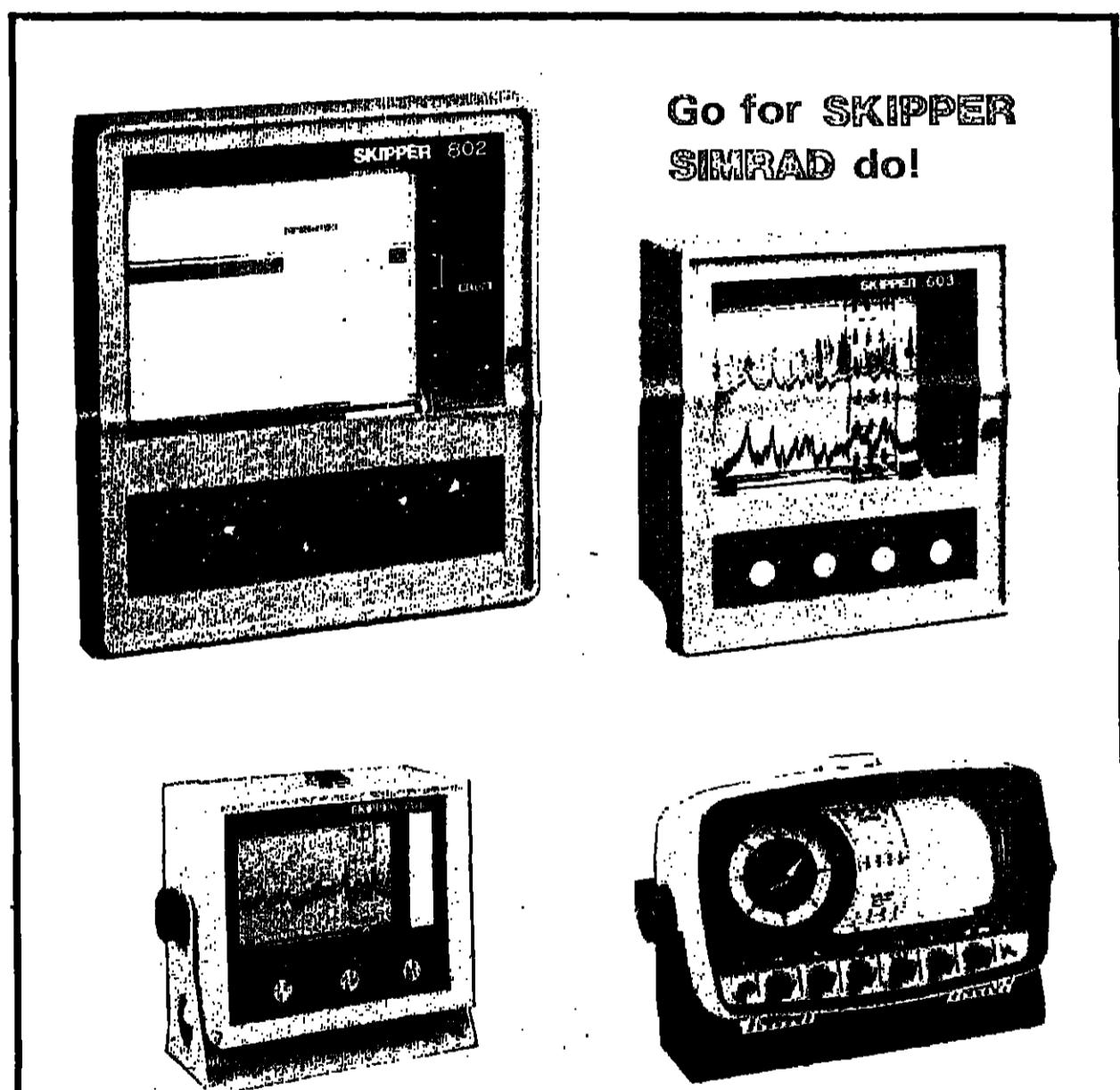


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The programme will begin in early 1979. It contemplates the selection of three centres from some 400 fishing villages along Chile's long coastline. Technical assistance will be made available for organising and managing fishermen's co-operatives, modernising artisanal fishing gear and improving on-board handling of catches.



The new complete guide to the U.S. fishing industry...

THE FISHING publishing event of the year in the United States was the launching, at Fish Expo in Boston in October, of the new 560-page *American Fisheries Directory* and Reference Book.

An associate publication of the journal *National Fisherman*, the book was compiled and prepared in three years of intensive work by its editor Burton T. Coffey, an advisory board and a production team. It must rank among the largest and most comprehensive references ever devoted to one fishing country.

It also appears at exactly the right time. The huge 1978 Fish Expo, with well over 300 exhibitors, demonstrated that the US fishing industry is not only large and fast-

rowing; it also offers a vast and discerning market for makers all over the world of equipment for finding, catching and processing fish.

The problem with this market is its sheer complexity. Although there is central direction to some aspect of US fisheries, most of the control and the organization is still vested in various administrations in 50 states.

Many requests

Complications in finding where to sell, who to approach and who runs what brought a continuing flood of requests for information to the *National Fisherman*, largest of the journals serving the industry.

There are enquiries for sources of equipment, boatbuilders, naval architects, research reports, specialised services, financing, statistics and locations of government offices.

It has long been a problem for *National Fisherman*, but also, says

Burt Coffey, an inspiration for the new Directory:

He explains in his Preface that, until now, US commercial fisheries did not have a central reference.

The *National Fisherman* saw the need but, from their experience, its staff felt that the Directory should be more than just the most extensive listing of equipment makers and dealers available.

"It should also be a complete reference book for sources of information in all aspects of the industry nationwide," adds Coffey.

He has accomplished just this. The Table of Contents alone occupies several pages. It may be too much to say that any basic information you need about the US fishing industry is in the book, but it is hard to find what, if anything, has been left out.

For those not yet well acquainted with American commercial fishing, a valuable introduction is in the extensive opening section. Here, state by state, are listed all the administrative services, the colleges, the fishermen's organisations, and recent catch figures.

Section Two deals with organisations of fish farmers, boatbuilders, fishermen, processors, researchers and many others.

Federal government

Section Three is a brief international directory. Section Four is a much larger national directory. This details US federal government bodies involved with the industry, setting out their functions.

It outlines fishery legislation, listing and summarising the various Acts. The Fishery Conservation and Management Act of 1976, which created the US 200-mile zone, is published in full.

Section Five, the largest, lists equipment and services and is divided into 15 chapters. Included are manufacturers by company and by product category; distributors and dealers by company and product category; cold storage facilities; marine surveyors; and naval architects.

Of particular interest in this section, in view of the big development in vessel construction, is a very extensive list of ship and boatbuilders.

For anyone looking to the United States as a market for equipment or as a source of fish, this Directory is an essential introduction. For those already involved, it must become a constant reference.

• The Directory is available from 21 Elm Street, Camden, Maine 04843, USA. The price is \$40 soft cover or \$52 hard cover, plus postage.

* Published by A. A. Balkema, P.O. Box 1675, Rotterdam, Netherlands.



MATAL
looks after your fish, from catch to sale

MATAL is all along the fish chain and is a leader in the refrigeration field. MATAL has equipped the majority of the French fishing fleet and almost all the tuna fleet, most of the main fishing harbours with ice towers and ice making plants, cold stores, refrigerated warehouses, processing and freezing lines.

MATAL's GENEGLACE ice flakes machines are designed to meet every needs from industrial plants to fish-monger slab.

Take profit of MATAL's experience!

Only a few minutes after you've put it on, heavy-duty

GENEGLACE

automatic machine will give you instantly sub-cooled, dry flake ice of the highest quality. A perfect ice for maintaining the initial weight, quality and freshness of your products.

From 0.5 to 30 tons/day.

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to receive more information on
GENEGLACE

FR

More advice from Torry...

THE Torry Research Station in Aberdeen, Scotland, has issued two more of its useful Advisory Notes. Latest in the series is Note 77 on squid and Note 78 on health hazards in handling industrial fish.

Squid is one of the under-used species now being suggested as a possibility in the British fish catch. The note gives information on its distribution in UK waters, on handling and processing, storage, and the yield of edible flesh.

Note 78 outlines the dangers of handling meat plant fish at sea and in port caused by poisonous gases released from catches.

THE BOOKS SHELLFISH FARMING IN JAPAN



Raft culture of abalone in Japan. Looking inward to aquaculture.

AS SPREADING limits have curtailed fish hunting opportunities in waters all over the world, Japan is having to turn inward — to her still-rich coastal waters and to the expertise she has accumulated over the years in the culture of fish.

China may be the largest producer of farmed fish, but most of this is in the form of carp and other freshwater species grown in the thousands of inland farm communes.

It is to Japan, with her varied forms of aquatic culture and techniques that can be applied world-wide, that most aquaculturists look to guidance and instruction.

Unfortunately, there is still a dearth of literature on Japanese fish farming technology. Translations are difficult and expensive.

Welcome

For farmers, therefore, a particularly welcome event is the translation of a classic work, edited by Professor Taken Imai and now published in English as *Aquaculture in Shallow Seas*.

This is a large book of more than 600 pages and is illustrated by photographs, drawings and graphs. For those wanting to read further, each of its sections ends with an extensive bibliography.

Five sections cover what are still probably the main areas of Japanese aquaculture. The first deals with the evolution of seaweed culture. It is followed by sections covering oysters, scallops, abalone and prawns and it sets the pattern for them.

Techniques

First, biological research work is described and this is followed by a description of the techniques employed.

In a sixth section titled artificial culture of shellfish, the book deals with the culture of micro-organisms used as feed, the rearing of larvae and seedling of bivalves and artificial seeding of abalone.

At a time when the prices of books on aquaculture seem to be rising ever higher, this very substantial work is a bargain at \$11.20 or \$21.30.

* Published by A. A. Balkema, P.O. Box 1675, Rotterdam, Netherlands.

PAGE

THESE DAYS, the modern deepsea trawler is almost always equipped to take her fish in mid-water as well as off the bottom. It was perhaps inevitable therefore that John Garner should follow his book *Modern Deep Sea Trawling Gear* with a companion volume on *Pelagic and Semi-pelagic Trawling Gear*.

In the second edition of *Deep Sea Trawling Gear*, published in 1977, he explains that it has been found necessary to add to the contents of this work, covering briefly mid-water trawls.

He now develops the subject, tracing first the evolution of pelagic trawls in association with better and better electronic methods of finding the fish and mechanical methods of handling the gear.

New concepts

He examines existing net patterns and new concepts, considering the different designs that have evolved and looking at their advantages and disadvantages. This chapter, like all others in this small book, gains immensely from the many drawings by the author.

In chapter three, he deals with specifications of single vessel pelagic trawl nets and different towing assemblies. He follows this with a chapter on otter boards and assembly procedures for pelagic gear and another on rigging procedures.

After describing semi-pelagic and single vessel dual purpose trawls, he closes with chapters on pelagic pair trawls and their application, and on mesh size and its selection.

Over-fishing is one danger that arises from the ever-increasing efficiency of fish finding and catching. John Garner admits this in his preface.

Quick rewards

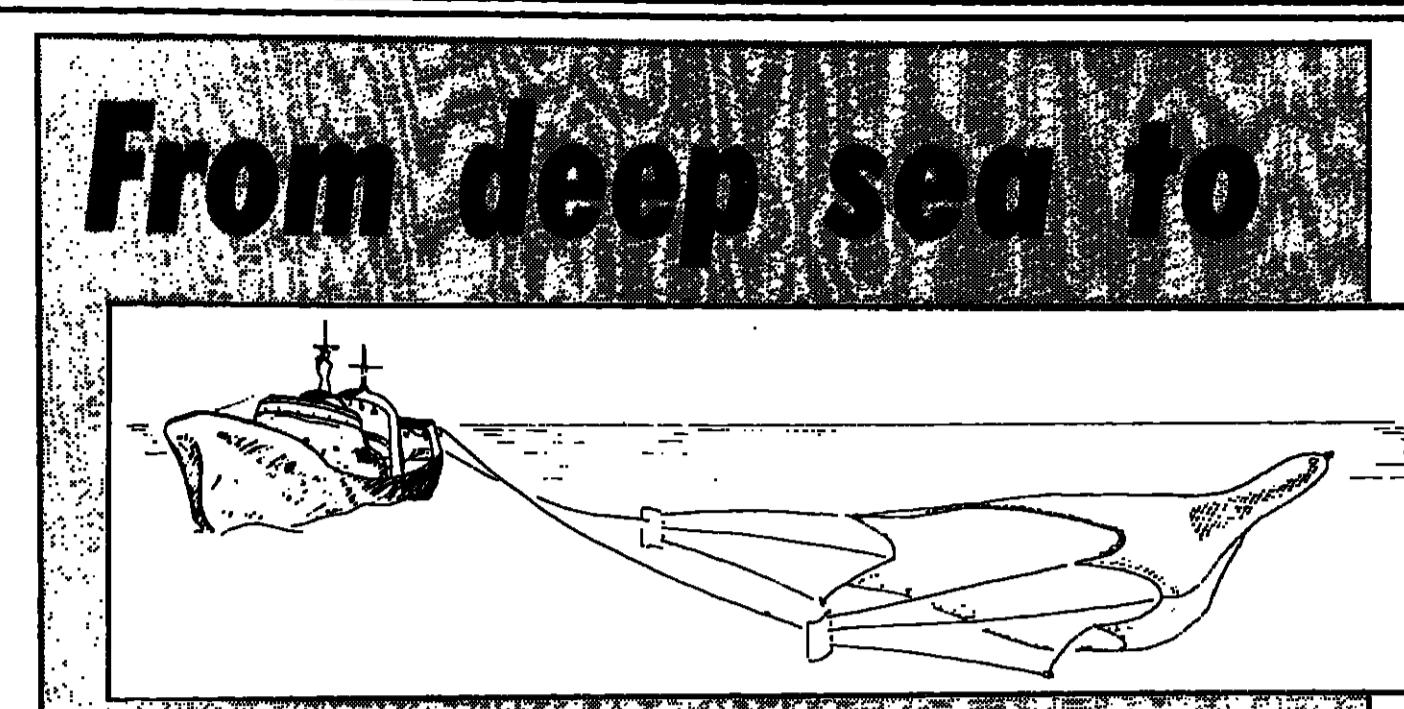
One solution, he notes, is short-term and quickly rewarding and lies in the closure of known breeding grounds. Other methods are the introduction of international quota systems and multilateral agreed landing rates.

Faced with these developments, he foresees the growth of "united" operation.

"By this term," he explains, "I wish to indicate the establishment of a working-catching unit which has achieved a high degree of proficiency and is thus accepted. An example might be the Gulf of Mexico style of

selective fishing using the most modern equipment, it can be possible to avoid the damage caused to stocks by non-selective catching of immature fish and by mussel hauls."

* Published by Fishing News Books, 1 Long Garden Walk, Farnham, Surrey, England. Price £9.00.



One of the many drawings by John Garner in his new book on pelagic trawls. This is a dimensional sketch of a stern trawler towing her pelagic gear in mid-water.

mid water

Quick briefing...

• IN 1976, at the request of a fisherman in Chatham, Massachusetts, University of Rhode Island commercial fisheries specialist R. E. Tabor tested the feasibility of Scottish seining in southern New England boats.

The fisherman's 39 ft boat, the *Destiny*, was converted from a line trawler to a seine netter and was used in trials during the spring of 1977.

In a 19-page report (Publication No. 725), Tabor discusses the boat's rigging,

equipment, gear and results of the trials.

The report can be obtained from University of Rhode Island, Marine Advisory Service, Publications Unit, Narragansett Bay Campus, Narragansett, Rhode Island 02882, USA.

Statistics for each country range from population, population growth rate, GNP, production and consumption to all specific catering industry data available.

The Encyclopedia is available from IFMA, 875 N. Michigan Avenue, Chicago, Illinois 60611, USA. Price US\$80.

POLLUTION

and the cost to fishing

widespread in the food chain. Heat pollution can cause dangerous "blooms" for shellfish,

which are equally at risk from

oil spills, oil sites and

industrial run-off.

The American Atlantic

and Gulf of Mexico

offer an excellent field for

study, being well provided

with monitoring facilities,

on spawning and the general

disturbance could be serious.

On the brighter side, rigs

and platforms are providing

new habitats

and food sources

for fish, which live on the

attached molluscs, etc.

Sport fishing catches, so

important in the USA,

have risen as a result; some of

the dollars earned from lensing

oil sites are ploughed back

into environmental work such

as artificial reefs.

Difficult

While it is difficult to

quantify the economic impact

of pollution, this FAO

publication helps us to assess

its nature and its effect on

fisheries, which is useful

enough. The cost cannot be

counted for years in some

cases, as with the recent

Amoco Cadiz oil spill off

Brittany. And if it could,

would it be sufficient deterrent

in the almost desperate quest

for oil?

FAO Fisheries Technical

Paper No. 172, "Economic

Impact of the Effects of

Pollution on the Coastal

Fisheries of the Atlantic and

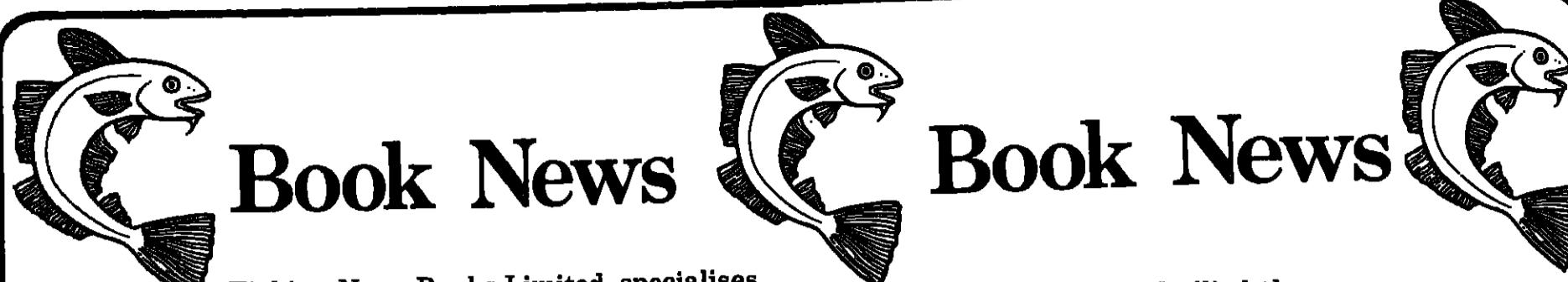
Gulf of Mexico Regions of the

United States of America.

From FAO agents, or from Publications Division, Via delle Terme di Caracalla, 00100, Rome, Italy.

For further details, please contact ROBERT J. HAYES (736) 7224.

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HARVEY, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 1



Book News

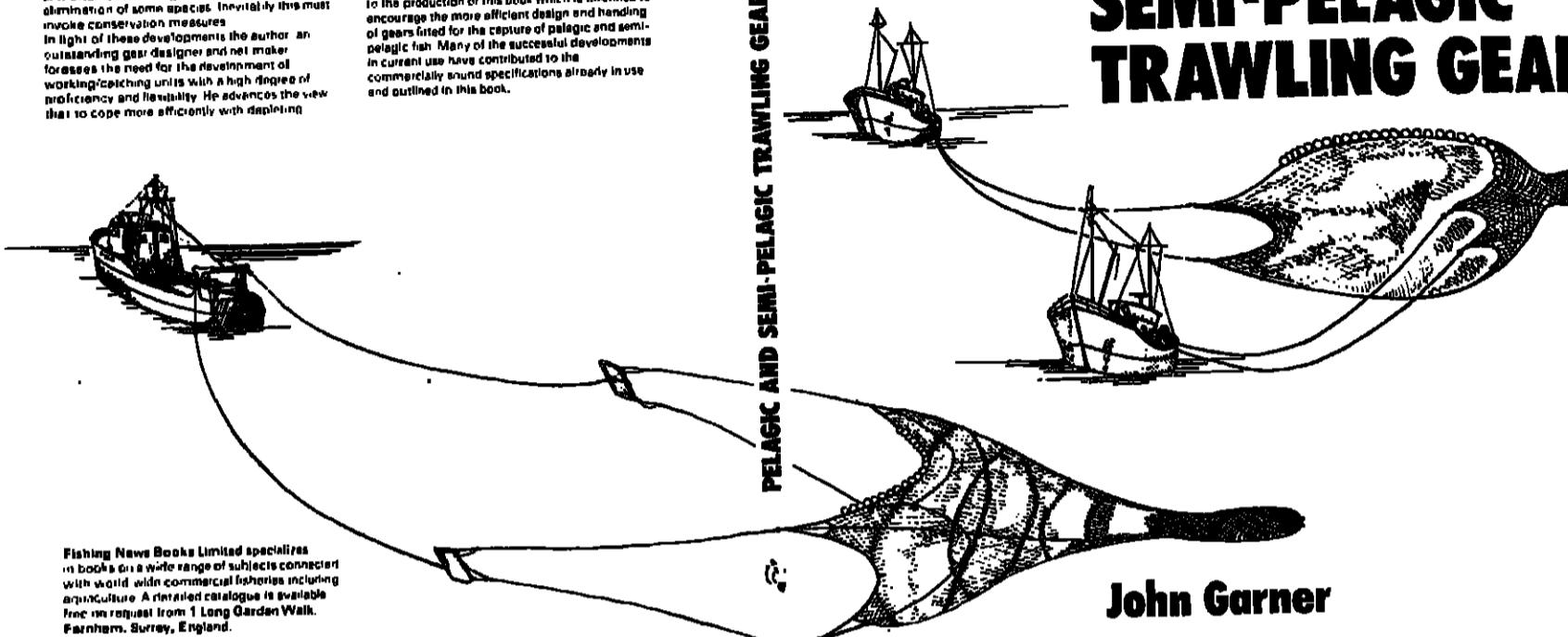
Fishing News Books Limited specialises in publishing practical books on commercial fishing, fish farming and allied themes.

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THE BOOK PAGE

FOR FISHERIES ECONOMICS...

THE COMING-OF-AGE

FISHERIES economics as a distinct area of economic science is conventionally, and quite rightly, regarded as dating from H. Scott Gordon's paper "The economic theory of a common-property resource: the fishery" published in the *Journal of political economy* in 1954.

The Schaeffer-Gordon model in a way, however, which differs from Gordon's pioneering approach, firstly, in that it is not based on production theory, and secondly, and more importantly, in that it takes account of the interest rate.

Another surprising conclusion of Clark's is that excess capacity, a common characteristic of the world's fishing fleets, is not simply the result of common property exploitation of the resource, but that it can occur under optimal management.

Supply and demand relationships are examined. The supply curve for the industry, i.e. the relationship between the price of fish and the quantity supplied, is unusual — it shows that initially increases in price are associated with increases in quantity, but subsequently further price increases are linked with reductions in quantity.

And because of the sharpness of these reductions there may be more than one point at which demand and supply are equal.

The absence of a unique equilibrium accounts for the demand instability and associated price fluctuations

which typify the industry. Some areas which could have been discussed more fully include the effects of partial controls and the effect of the fishing industry on the distribution of incomes.

Impressive

However, the book is an impressive statement of the present position of fisheries economic theory, yet it cannot be unreservedly recommended to people in the industry.

For a start, it is a mathematics book, one of a series of mathematics monographs. Further the book does not relate only to the fishing

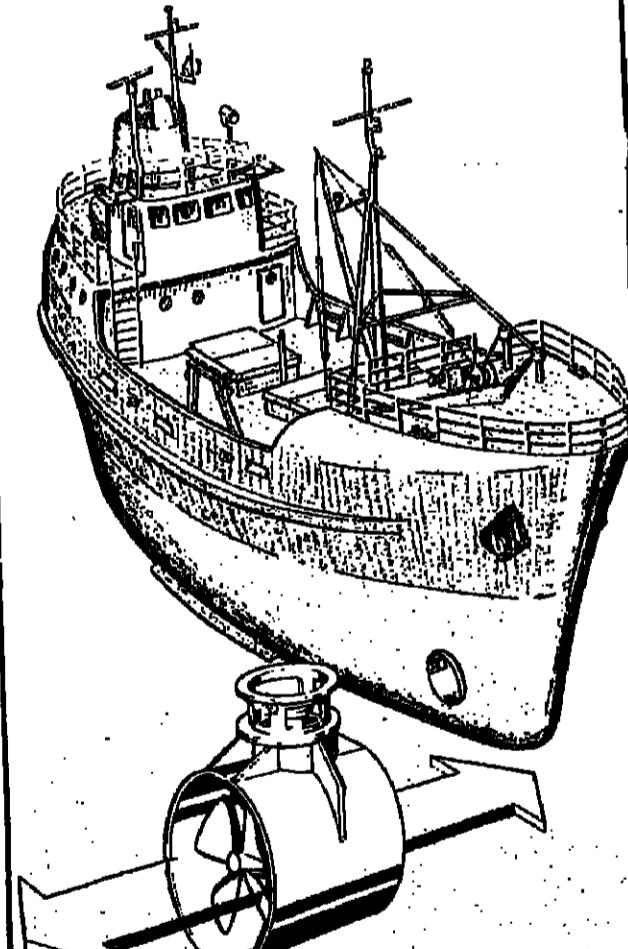
a basic theoretical framework on which future work can be based it is a very important book.

*Colin W. Clark,
Mathematical Bio-economics: The Optimal Management of Renewable Resources. John Wiley & Sons Ltd.

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Pacific sturgeon and Atlantic halibut

THE STURGEON is one of the many species that make up the varied fish harvest of the United States. There are two species caught, the white and the green sturgeon. They are taken in the Pacific north-west, by fishermen of Oregon and Washington states.

This small, but interesting fishery, is the subject of an article in the July 1978 issue of the NMFS journal *Marine Fisheries Review*.

According to the writer, Norman B. Parks, sturgeon are fished in coastal waters of the two states and in many of their coastal rivers.

Sturgeon catches have been relatively stable on the Fraser River and have increased on the Columbia River. Increases in incidental catches indicated, says the writer, that commercial regulations (including size limits and the closed season for other species) have been successful in halting the decline.

In another article in the same issue, J. T. R. Nickerson, looks at the Atlantic halibut (*Hippoglossus hippoglossus*) and its utilisation.

In the 1880s, the port of Gloucester had about 40 boats fishing only for halibut, which was handled entirely as fresh fish. Today, however, there is no directed halibut fishery carried out by the US east coast fleet due mainly to a decline in stocks.

The *Marine Fisheries Review* is published monthly and is available, outside the United States for a subscription of \$15.95 a year, from the Superintendent of Documents, US Government Printing Office, Washington DC 20402.

Anatomy of a co-op

IT IS GENERALLY accepted that communities of small-scale fishermen are more likely to progress economically and technically when organised into a group such as a co-operative. From the administrators' point of view, a co-op parcels up a number of rugged individualists into a manageable group, capable of joint responsibility in matters such as the administration of loan funds.

But it does not follow that fishermen will readily adopt what the expert believes will be good for them, as aid organisations have discovered, often to their embarrassment. It helps to understand the fisherman's attitude to, and concept of co-operative before persuading him to form one.

In *Panamanian Small-scale Fishermen: Society, Culture and Change*, edited by Richard B. Pollnac, Department of Sociology and Anthropology of the University of Rhode Island has collected a number of studies by its staff, designed to explore such attitudes.

It used for its research the small-scale fisheries of Panama, comprising 1,200 full and part-time fishermen operating gillnets and lines.

By studying a sample of 153 fishermen, scattered over seven areas, the Department was able to compare the attitudes of co-operative members with those of non-members and that of relatively sophisticated groups with others from more remote areas.

Older groups

Fishermen who had belonged to or been associated with co-operatives were seen to be more "pro" co-ops and this became more marked in older age groups, suggesting that experience reinforced this view. Many saw the co-op as a "buffer" between them and the administrative/financial hassle of the outside world; others saw it as a more efficient way of marketing their fish.

Those with no direct experience of co-operative fishing visualised the main

benefit as the provision of gear and equipment, a function which, in actual experience, was relegated to third place. In all cases, the abstract concept of co-operation was seen as being less important than the more tangible benefits of loans and better marketing.

Authors Richard B. Pollnac and Roberto Ruiz-Stout have produced a useful addition to the already formidable amount of literature bearing on this subject — the references occupy over three pages — though it should be understood that this particular research project was part of an overall development programme for the area and not carried out as pure research.

**Panamanian Small-Scale Fishermen: Society, Culture and Change*. Edited by Richard B. Pollnac, Department of Sociology and Anthropology (Marine Technical Report No. 44), International Center for Marine Resource Development, University of Rhode Island, Kingston, Rhode Island 02881, USA. Price \$1.

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Pursers bring hope for better times in south India

THE INTRODUCTION of purse seining has given a big boost to fishing along the coast of the southern Indian state of Karnataka, reports *FNI* correspondent Trevor Drieberg.

Waters off Karnataka abound in mackerel and sardinella. It is estimated that the state could export 60 tons of mackerel daily to the Persian Gulf countries and enquiries are already coming in.

The 300 km stretch of coast from Ullal to Murwar has been described as "an inexhaustible fish mine." Catches there vary widely between 40,000 and 120,000 tons a year, depending on whether the shoals approach the coast.

Until 1977, despite mechanisation of boats over the past two decades, the large traditional rampani nets used accounted for 75 per cent of the mackerel and sardinella. Some 1,500 small mechanised boats working in the area concentrated mainly on trawling for shrimp.

Doubled

Now purse seining is bringing promise of better times for local fishermen. The number of purse seiners has doubled this year to 100 and another 80 boats are building in yards along the coast.

The method was only recently introduced to Karnataka from Goa but local fishermen quickly learnt the technique which enables them to take in 600 to 800 tons a day.

In 1977 some 50 purse seiners netted a total of 30,000 tons of a 126,000-ton catch; another 30,000 tons was taken by the small mechanised boats and the rest by the rampani nets.

Problems

Karnataka's Director of Fisheries, Mr. Jayaraj, expects the catch this year to rise to 140,000 tons. But the better fishing has also brought problems.

The 60 ice plants along the coast cannot cope with demand, and another 100 tons of capacity is needed urgently.

The state Fisheries Development Corporation has only 50 tons of freezing capacity a day and 800 tons of cold storage space. Both need expanding.

Possibilities of mid-water trawling are also arousing interest in Karnataka. Two groups of fishermen are reported to have started fishing with the new gear. Working from 10-metre long powered boats, they have been taking daily catches of 2.5 to 3.5 tons.

Satellite watch suggested

NORWAY should consider satellite surveillance of the eastern Barents Sea to assess fishing intensity in areas where she has no control.

Suggesting this, Leiv Grønnevik, secretary of the Federation of Fishing Boat Owners, said satellite pictures would provide information on the number of boats in a given area at any time.

This could then be used in conjunction with statistical material and research data to present a total impression of catches. The last step in the process would be to compare results with quotas and reported catches.

SIX MORE BOATS

WILMAR Fishing Co., a deepsea fishing firm based in Quezon City in the Philippines, is acquiring more vessels for its fleet with the help of a long term loan of 3.4 million pesos (about £360,000).

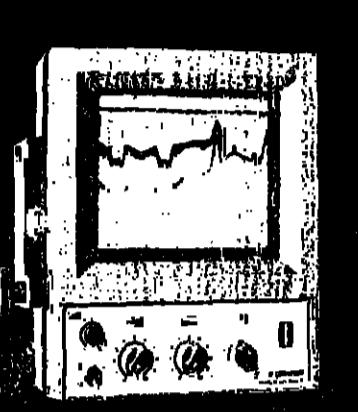
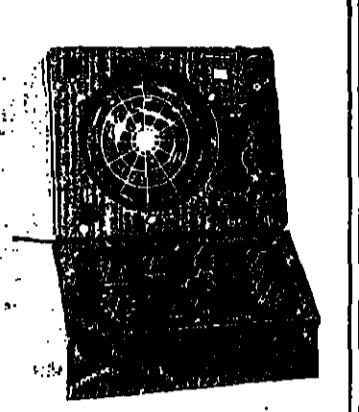
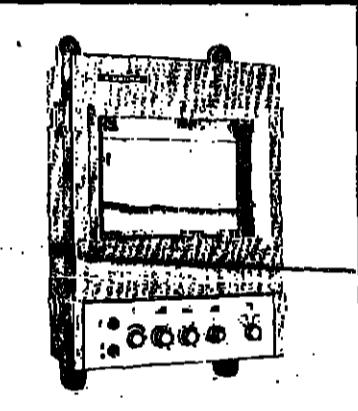
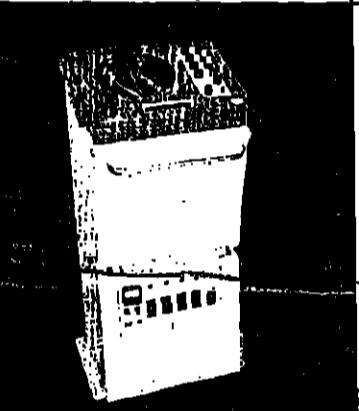
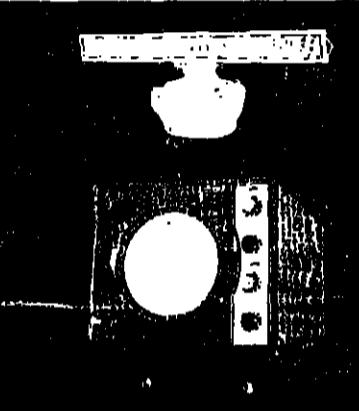
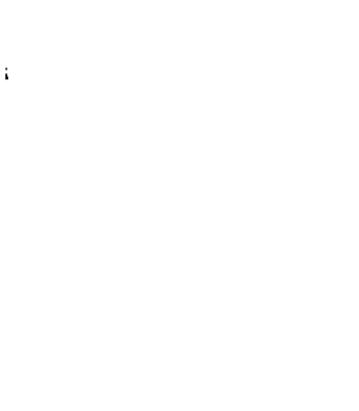
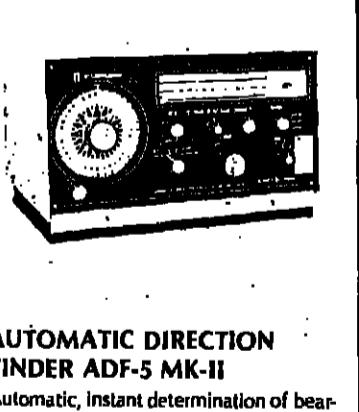
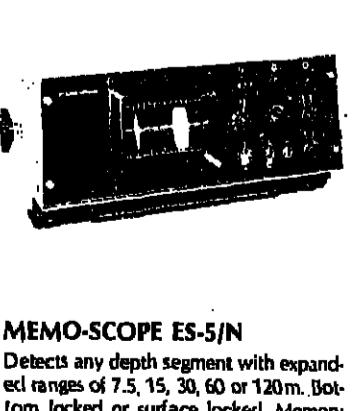
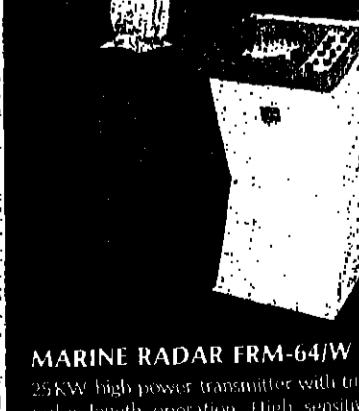
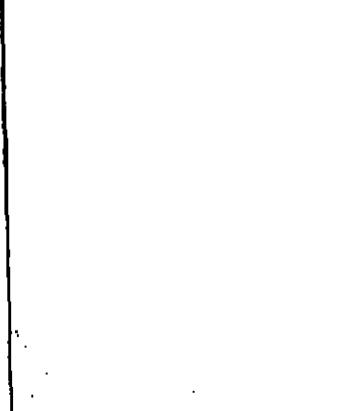
The expansion, funded by the Private Development Corporation, will enable the company to supply fish and fish products to the industry, turning out smoked and dried products, fish sauce and fish sauce.

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ECHO SOUNDER FE-D612 High reliability. Wide dynamic range for easy ground discrimination. Built-in 2KW solid-state transmitter.	SCANNING SONAR FSS-32B Full-circle, multi-beam electronic scanning sonar. Panoramic 360° search. 10" bright picture. Four ranges: 200, 400, 800 and 1600 m (off-center to 2600 m).	OMEGA RECEIVER FORM-3AR Tracks all stations received. Unique lane interlock system for flexible selection of Omega Stations. Can be connected to Satellite Navigator FSN-203.	MARINE RADAR FR-160 The most compact radar ever sold in the world with commercial radar performance. 7" CRT. 1/2 to 16 miles (off-center to 20 miles).	AUTOMATIC DIRECTION FINDER ADF-5 MK-II Automatic. Instant determination of bearing of radio transmitters. No 180° degree ambiguity.
				
MEMO-SCOPE ES-5/N Detects any depth segment with expanded ranges of 7.5, 15, 30, 60 or 120m. Bottom locked or surface locked. Memory circuits provide non-flickering, steady picture.	SSB RADIOTELEPHONE NS-15 150W output. 40 receive, 36 transmit channels in 1.6—22MHz. All plug-in circuit boards for easy maintenance. Built to CEC specifications.	SATELLITE NAVIGATOR FSN-203 High accuracy positioning system using advanced microprocessor techniques. Worldwide coverage. Automatic dead reckoning between satellite fixes.	MARINE RADAR FRS-48 High sensitivity, solid-state, IC amplifier. 7" CRT, 10KW output. 1/2 to 48 miles.	
FACSIMILE RECEIVER FAX-103 Single stylus with memory circuits. No 'worry' about stylus adjustment. Automatic unattended operation, corresponding to VMO stop/start signals.				

by M. G. G.